

Sea King



10
AEROGUIDE

Westland Sea King HAR Mk 3

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AEROGUIDE 10: WESTLAND SEA KING HAR Mk 3

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Cover illustration

Westland Sea King HAR Mk 3 XZ596 undergoes checks prior to a flight test, following servicing by the SAR Engineering Squadron at RAF Finningley, February 1985.

Back cover plate

Westland Sea King HAR.3 XZ592 in Dark Sea Grey finish, 'B' Flight, RAF Brawdy, September 1984.

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INTRODUCTION

The bright yellow helicopters of the Royal Air Force's Search and Rescue Wing are perhaps the most obvious manifestation of the skill, courage and dedication displayed by RAF personnel in the service of their country. The readiness of the flying crews to take off on life-saving missions, at a moment's notice and frequently in appalling weather, and their success in carrying out these tasks, are emphasised time and again throughout the year in newspaper headlines and television reports.

The helicopters and their crews – the 'sharp end' of any rescue mission – are inevitably the focus of media attention, but the pilots, radar/winch operators and winchmen would always be the first to pay tribute to the personnel 'behind the scenes' – those engaged in maintenance, servicing, training and general organisation – without whose hard work any attempt to respond effectively to an incident would be doomed from the start. Neither should the excellence of the equipment be forgotten, the Wessex and Sea King helicopters enabling the SAR Wing to provide coverage the length and breadth of the British Isles and across all adjacent waters.

SAR ORGANISATION

The formation of the RAF's Search and Rescue Wing preceded the anticipated introduction to service of the superlative Westland Sea King HAR Mk 3 helicopter. Until September 1976, helicopter SAR duties were the province of two individual squadrons, No 22, which had general responsibility for detachments along the west coast and covered the southern part of Britain, and No 202, which operated detachments along the east coast, covered the northern part and had inherited its task from No 228 Squadron in 1964.

The Wing has its headquarters at RAF Finningley, Yorkshire, and has assumed overall responsibility for these two SAR units, the former flying short-range Wessex helicopters and the latter equipped with the more modern, long-range Sea Kings. In addition, the Wing maintains an Engineering Squadron at the station, and also co-ordinates the activities of the RAF Sea King Training Unit (SKTU), which is based at RNAS Culdrose in Cornwall, and of the Search and Rescue Training Unit (SARTU), located at RAF Valley in Anglesey.

No 202 Squadron currently operates from four UK-based Flights: 'A' Flight is based at RAF Boulmer in Northumberland, 'B' Flight at RAF Brawdy in Dyfed and 'D' Flight at RAF Lossiemouth in Morayshire; 'C' Flight (RAF Coltishall, Norfolk) was deployed to the South Atlantic following the Falklands War in 1982, where it was subsequently designated No 1564 Flight (and came under the direct administration of Strike Command, although No 202 Squadron continued to provide flight crews and a proportion of the groundcrews). SAR coverage at Coltishall was meanwhile effected by No 22 Squadron's 'F' Flight until 'C' Flight 202 Squadron was re-established there on 2 September 1985 following the delivery of the first of three new Sea Kings.

Below: Sea King XZ592 demonstrates its capabilities during a pre-delivery publicity sortie; actual rescue missions are not always carried out in such placid conditions! This particular helicopter, the eighth RAF Mk 3, was later repainted overall Dark Sea Grey for service in the South Atlantic and is featured in this finish elsewhere in this book and on the back cover. *Westland Helicopters Ltd*





The Squadron comes under the command of No 18 Group, the 'maritime arm' of RAF Strike Command, operational control and the tasking of sorties being the responsibility of the Rescue Co-ordination Centres (RCC) at Mount Wise, Plymouth, and Pitreavie Castle, Dunfermline. Its helicopters, in Flights dispersed to offer the most advantageous long-range cover, are kept at fifteen minutes readiness through daylight hours and at 45 minutes through the night; in addition, each Flight generally has a second Sea King at 60 minutes standby during daytime. Although for obvious reasons many rescue calls involve missions offshore, the aircraft also respond to emergencies occurring anywhere on mainland Britain, and certain locations (for example, the Lake District) are theoretically within range of all four Flights.

The drama of air/sea rescue invariably highlights the work of the SAR Squadrons in life-saving operations involving shipwrecked seamen, stranded holidaymakers and even, on occasion, the over-adventurous small boy, but although the Squadrons are

often cast in the role of a public service it is not generally appreciated that their primary responsibility is the rescue of military aircrews, particularly of accident victims forced to ditch in the waters surrounding the British Isles. They are not and never have been intended as a sort of airborne equivalent of the Royal National Lifeboat Institution; even so, in practice the bravery of the aircrews and the proud record they have built up over the years tend to belie this.

THE SEA KING

Sea Kings first joined No 202 Squadron in September 1978, an order for fifteen machines having been placed with Westland by the Ministry of Defence some three years earlier. The first Flight was established at Lossiemouth, although HAR.3s had been engaged in training at the SKTU since the autumn of 1977. The aircraft were procured to answer the steadily increasing need for an SAR platform possessing a range very much greater than the 90nm effective radius of the existing Whirlwinds, especially in view of the longer and longer inter-

ception sorties being flown by RAF fighter aircraft.

The Westland Sea King, a licence-built version of the American Sikorsky SH-3D (S-61), was already in service with the Royal Navy as a very efficient anti-submarine helicopter, and in 1969 work began on an export order for a dedicated SAR variant for the Federal German Navy. Differing little from the Royal Navy's Sea King Mk 1s except for the deletion of sonar equipment, the addition of rescue equipment and the extension aft of the cabin to provide a roomier interior, the 22 West German Mk 41s were followed up by an order from Norway for ten Mk 43s.

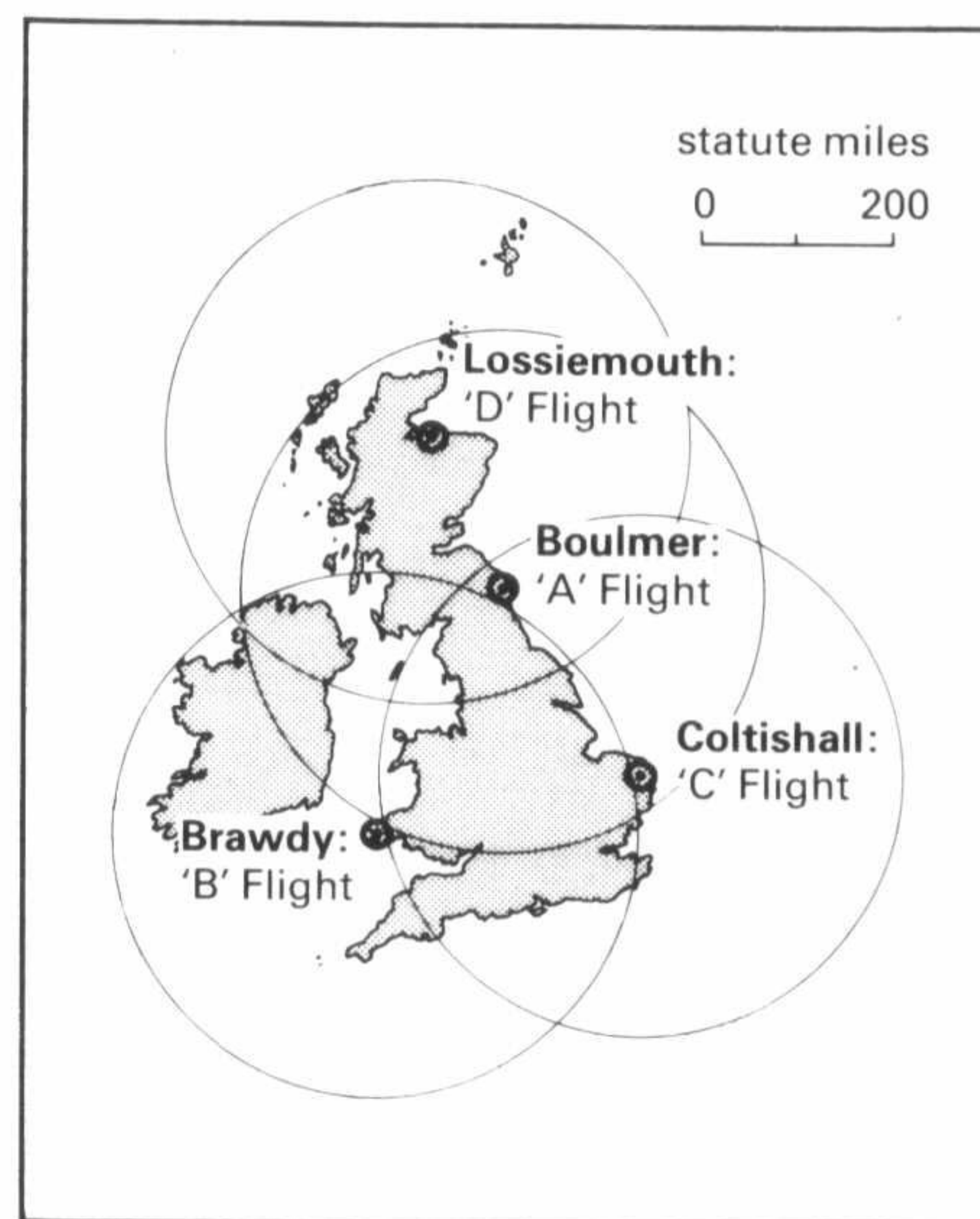
The original Rolls-Royce Gnome H1400 engines were uprated to -1 standard against an Australian order for ASW Sea Kings, and this Mk 50 variant roughly translated as the Mk 2 for the Royal Navy and formed the basis for five Mk 48 SAR machines for the Belgian Air Force and, ultimately, for the RAF version.

The Sea King HAR Mk 3 is a twin-engine, single main rotor helicopter of monocoque construction featuring a chined lower hull and a semi-retract-



Above: XZ594 undergoes pre-flight checks just prior to a test sortie at RAF Finningley, February 1985; the cyclic pitch of the rotor blades appears to be undergoing check at this moment – note the angle of the blade pointing to port. Ground equipment visible here consists of the Houchin ground power unit (left), a towing truck (right) and, close to the helicopter, a carbon dioxide emergency extinguisher. The flight crew are seated in the cockpit while the groundcrewman listens to instructions and gives clearances via his communications lead.

Left: Minutes later XZ594 soars away. Note that the main winch is absent from this machine: the Engineering Squadron at RAF Finningley carries out second and third line servicing on Sea Kings, and the hoist is generally removed by the Flights before the aircraft are despatched.



Above left: No 202 Squadron carries out frequent training exercises, honing men and machines to perfect co-ordination. Here the camera has caught a dramatic moment during Exercise 'Sarex', November 1978. *By courtesy of Sqn Ldr Derek Exley*

Above: The SAR Sea Kings each have an effective still-air radius of some 275nm, enabling the whole of the British Isles and the surrounding territorial waters to be covered by No 202's four Flights.

Left: XZ592 photographed at RAF Brawdy in September 1984. The helicopter is now in 'Grey Whale' finish and is fitted with RWR.



able undercarriage housed in side sponsons; the sponsons are equipped with inflatable buoyancy bags to give improved flotation if the helicopter alights on water (although it is not part of its normal mission to do so).

The avionics fit is particularly advanced and includes the Decca 9447F Tactical Air/Navigation System (TANS), a computer which provides such facilities as read-outs of position in latitude/longitude, grid, bearing and distance to or from a waypoint, and heading to steer and time to go to a waypoint (including intercepts of moving targets the position, course and speed of which are known); present position indication; and automatic wind calculation. Equally advanced is the Automatic Flight Control System (AFCS), which provides for autostabilisation, heading hold (barometric and radar altimeter-based), automatic hover and automatic transitions to and from the hover. An array of up-to-date communications equipment – UHF and VHF (AM), VHF (FM) Marine band, HF and Pye Olympic – enables the Sea King crews to carry out their tasks to the peak of efficiency.

The RAF Sea King fleet now numbers nineteen helicopters, the original batch, XZ585–599, plus ZA105) having recently been joined by three further





Opposite page top: Westland's first customer for a specialised SAR version of the Sea King was the *Bundesmarine* (West German Navy), one of whose Mk 41s is depicted here. *Westland Helicopters Ltd*

Opposite page bottom: Ten Sea King Mk 43s were purchased by Norway, for operation by the Ministry of Justice; deliveries began in 1972. *Westland Helicopters Ltd*

Above and below: The Belgian Air Force also operates Sea Kings in the SAR role; like the RAF machines (but unlike those of the *Bundesmarine* and the *Redningstjeneste*), they are fitted with the uprated Gnome engines. *Westland Helicopters Ltd/Force Aérienne Belge*

machines (ZE368–370) to re-establish the Coltishall Flight. The familiar yellow Sea Kings have undergone few obvious modifications since they entered service, but the Falklands deployment demanded a toned-down colour scheme (Dark Sea Grey overall); the fitting of radar warning receivers (RWR) to the nose and beneath the tailcone, of a General-Purpose Machine Gun (GPMG) mounting at the cabin door and of an 8000lb capacity cargo sling (frame) beneath the fuselage; and the installation of internal electroluminescent panels for use when night vision goggles (NVG) are worn by the crew, of Omega navigation equipment (also

fitted to the all-yellow XZ585), of ARC.340 FM Army communications equipment, and of Mode 2 IFF. Various other minor equipment and avionics modifications have been introduced to all the Sea Kings, whilst rotor blades of advanced composite construction will in due course replace the original all-metal components. However, the basic design – the most technologically up-to-date airborne close-in search and rescue system in the world today – is unchanged, and the Sea King HAR Mk 3 will continue to perform its vital mission for many years to come, exactly in accordance with the No 202 Squadron motto: *Semper Vigilare*.



AIRFRAME

Below: Ready for any emergency: XZ585 at Brawdy, September 1984. The photograph illustrates the standard method of lashing down the main rotor blades to keep them steady when the aircraft is parked in windy conditions: 'slip-on' covers are fitted over the tips and secured with rope to shackle points on the undercarriage gear.

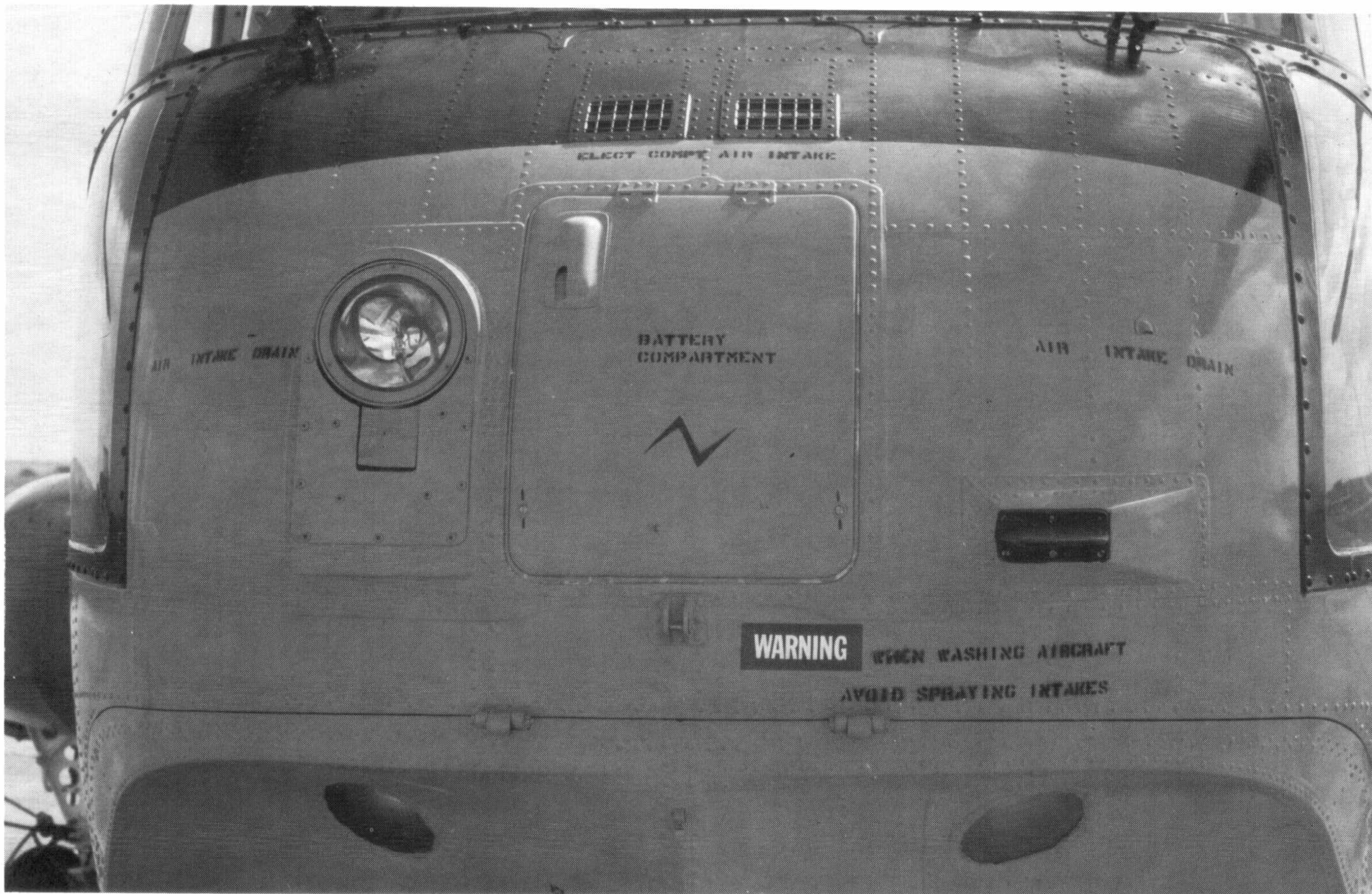
Bottom: The large size of the Sea King is emphasised in this view of 'Grey Whale' XZ592. Basic dimensions include an overall length (rotors turning) of 72ft 8in, an overall height (rotors turning) of 16ft 10in and a main rotor diameter of 62ft.

Although the grey finish of this aircraft is matt, the areas surrounding the fuselage lettering are semi-gloss, giving the appearance of decals.

Opposite page: A view of the Sea King's forward fuselage. The sea anchor cable is stowed up the side, the anchor itself residing behind the co-pilot's seat; the cable also serves as a tow rope for use in the event of an emergency landing. Crew entry is via the personnel door seen at the far right of the photograph, the helicopter's main cabin door being situated midway along the starboard side of the fuselage.







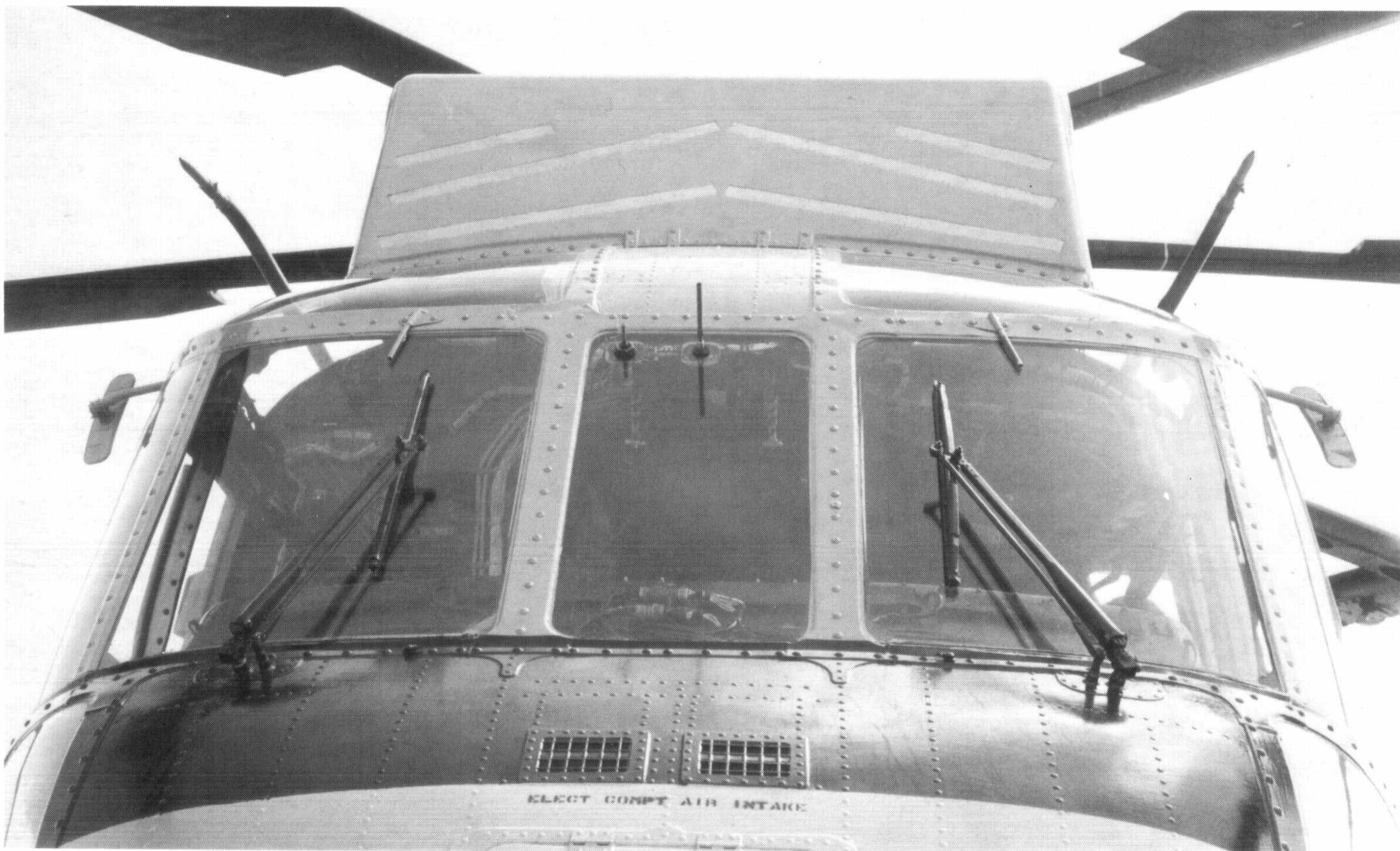
Above: Frontal aspect, the principal features visible being one of the two 450W controllable spotlights, the access door for the battery compartment and (right) the ILS glide slope antenna.

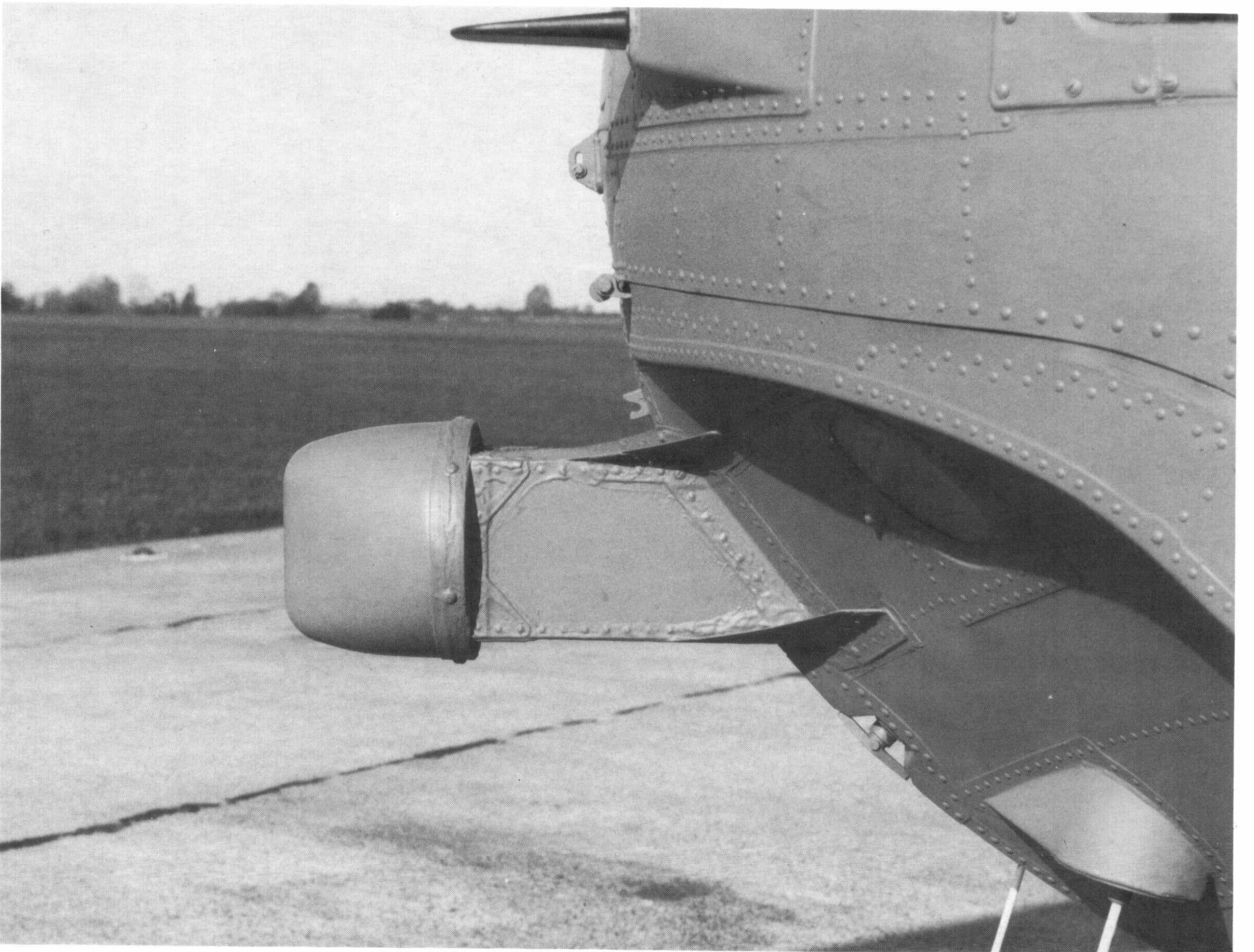
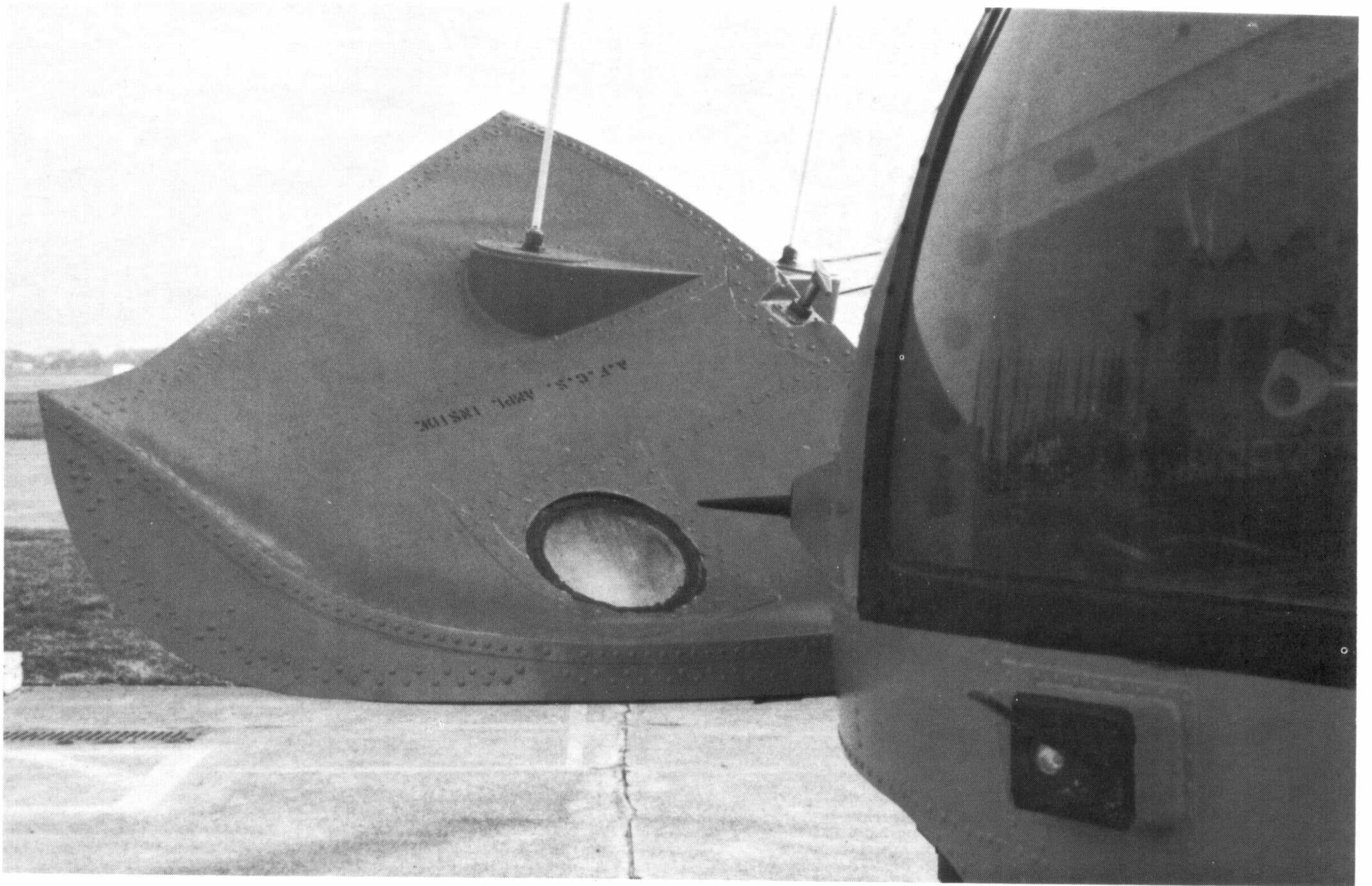
Below: The three-piece windscreen, showing the configuration of the wipers. The distinctive Foreign Object Deflector on the roof of the cockpit protects the engines against the

ingestion of debris; note the porous anti-icing strips across its front face.

Opposite page top: Access to the main electronics bay is via a lift-up door in the nose. The antennas are VHF (AM) homers.

Opposite page bottom: Close-up view of the nose-mounted RWR fairing as fitted to the 'Grey Whales'. The nosebay door incorporates two fixed floodlights. *Westland Helicopters Ltd*







Above left: The FOD shield from the port side, giving an indication of the complex contours at the rear. The prominent sensor visible is one of the two pitot static pressure heads.

Above right: A view of the cockpit roof with the FOD shield removed. The upper transparencies are green-tinted to reduce glare, although the shield covers much of their area.

Below: The yellow-finished Sea Kings are kept in immaculate condition, and areas prone to natural staining and chipping are deliberately painted black to disguise such effects, as around the footgrips adjacent to the sponson struts and behind each engine exhaust. Note the vertical white stripes indicating the location of the footgrips.

Opposite page top: The 'Grey Whales', by contrast, show no such embellishments, and the exhaust gases from the Gnome turboshafts quickly leave their mark across the access doors for the main gearbox.

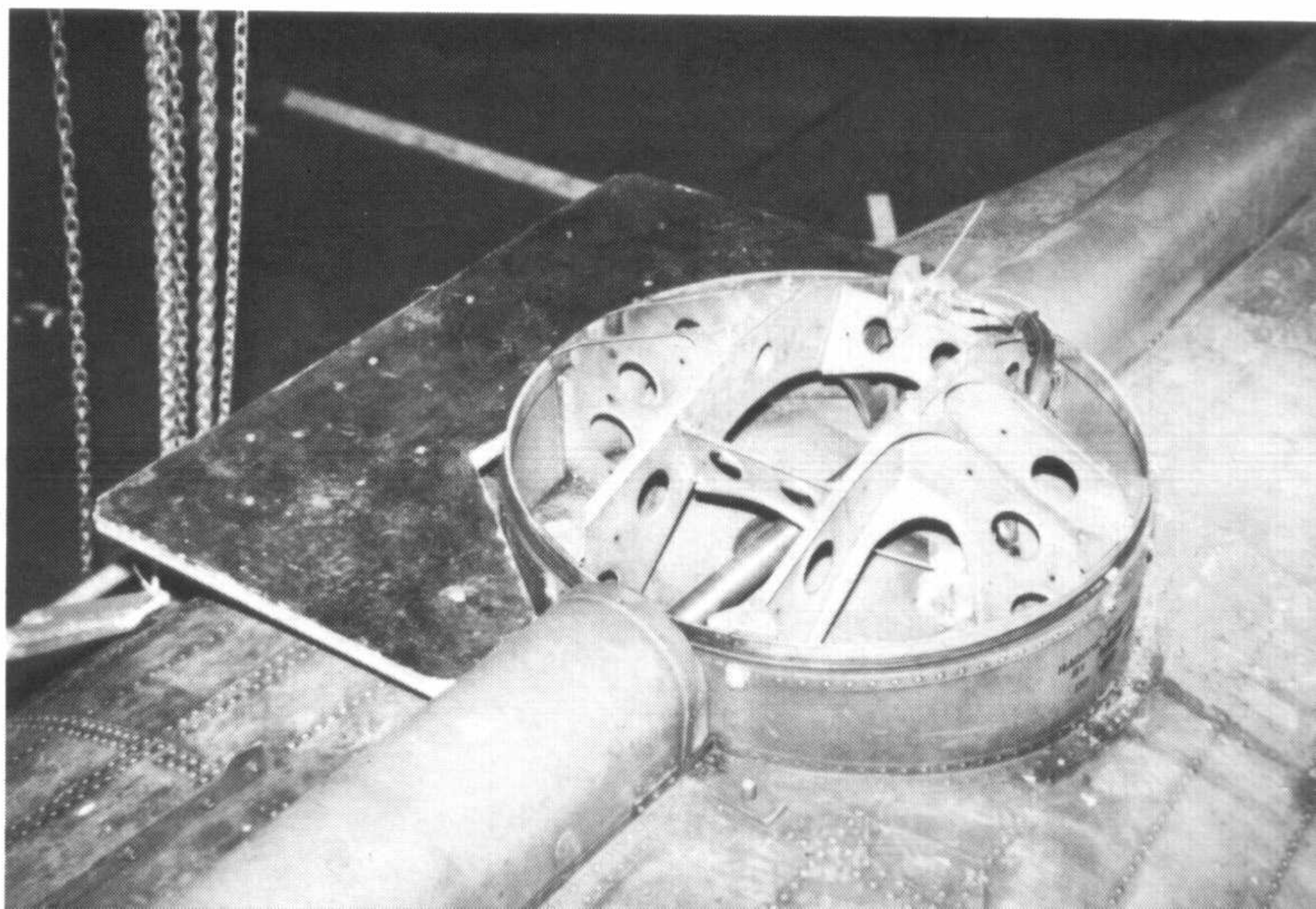
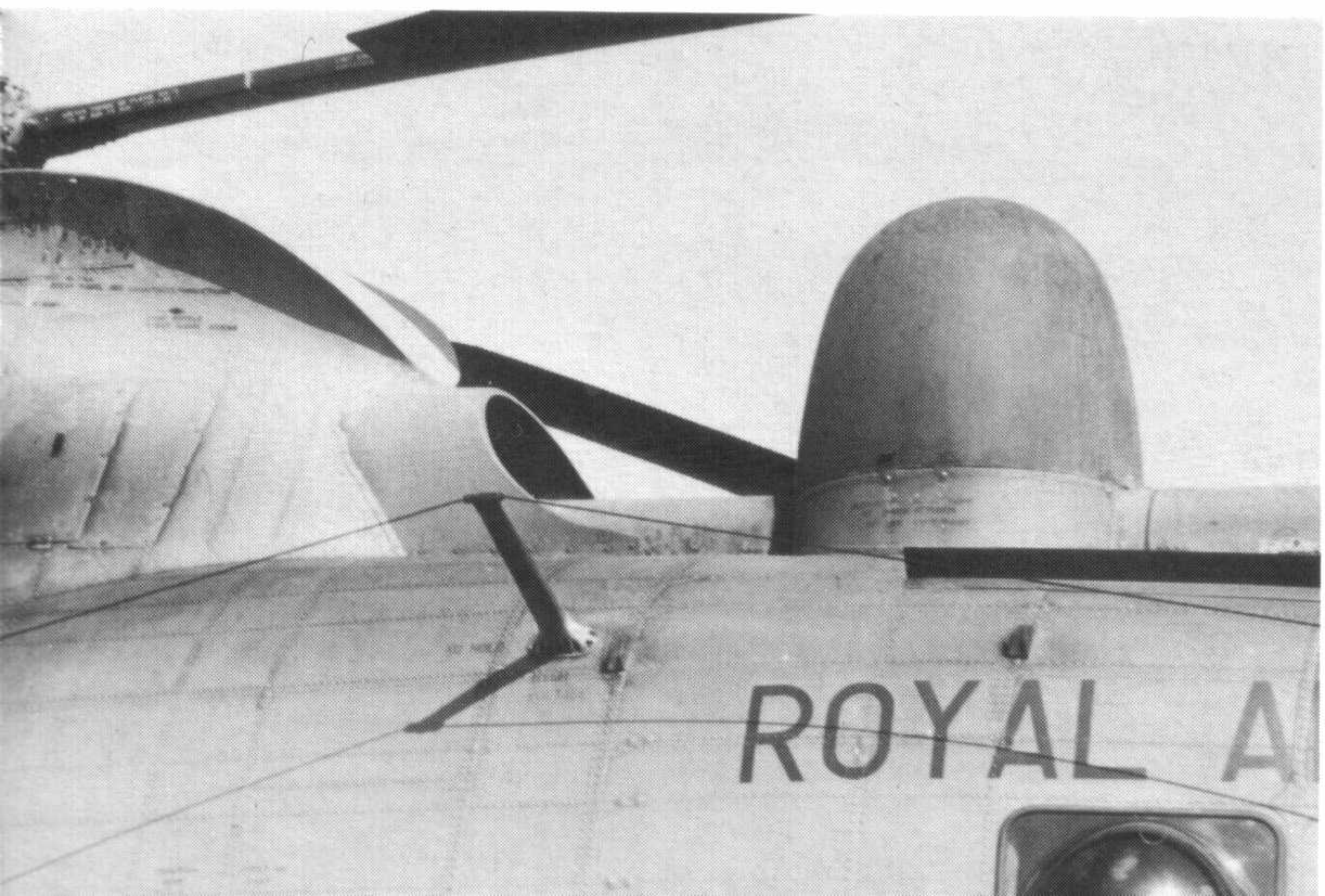
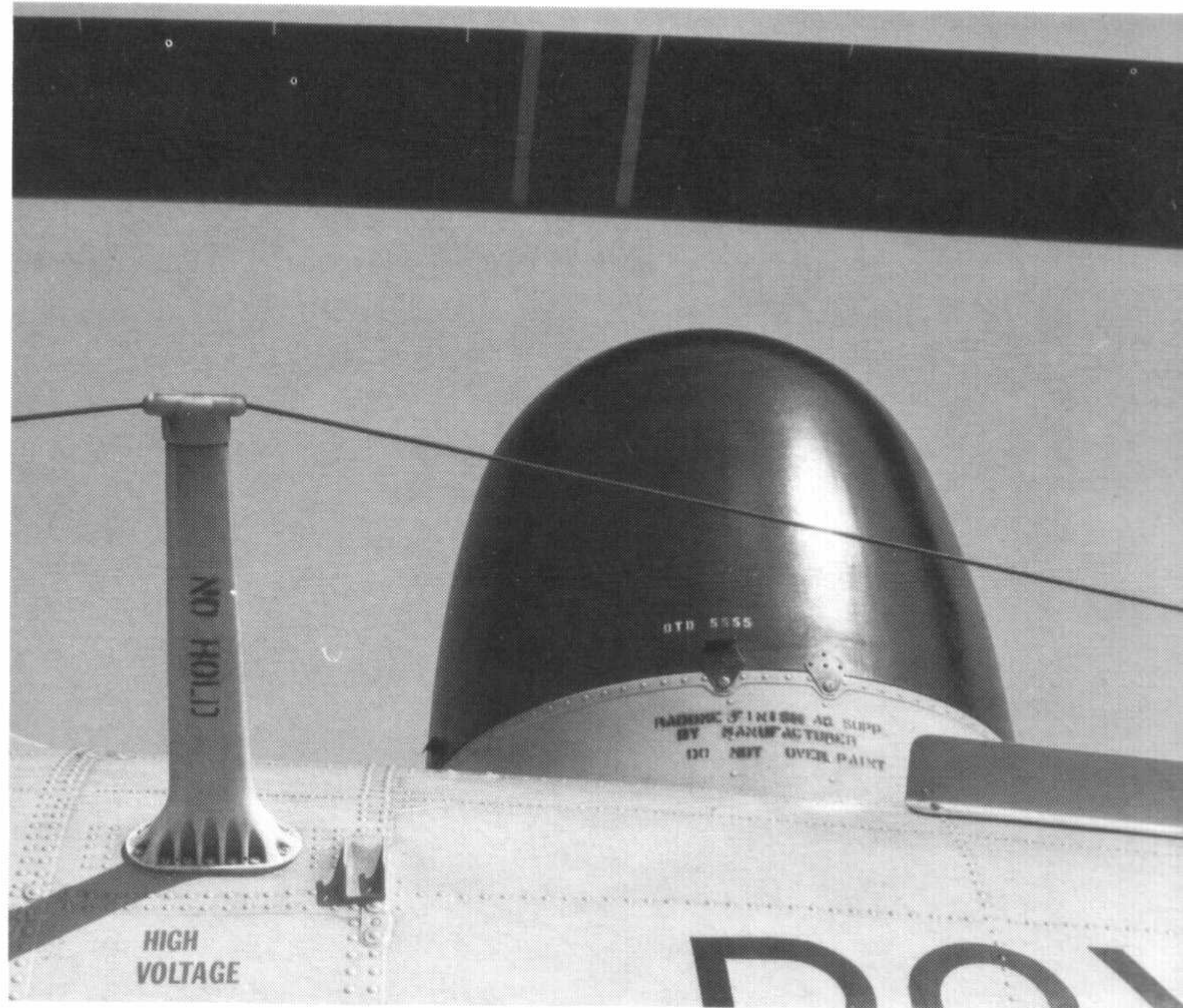
Opposite page centre left: A close view of the port-side engine exhaust outlet of a standard HAR.3, the staining barely detectable against the black paintwork.

Opposite page centre right: The Westland-built Sea Kings feature a prominent dorsal radome, which houses the scanner for the MEL Lightweight Helicopter Radar (search/weather facility). The wire running across the foreground is part of the HF radio antenna system.

Opposite page bottom left: The finish of a 'Grey Whale's' radome is more subdued. The strake running aft from the side of the dome diverts the airflow when the helicopter is hovering and gives additional power stability in this mode, changing the downwash pattern. Note the access ladder clips.

Opposite page bottom right: Upper fuselage detail, with radome and scanner removed, showing the tail rotor drive fairing.





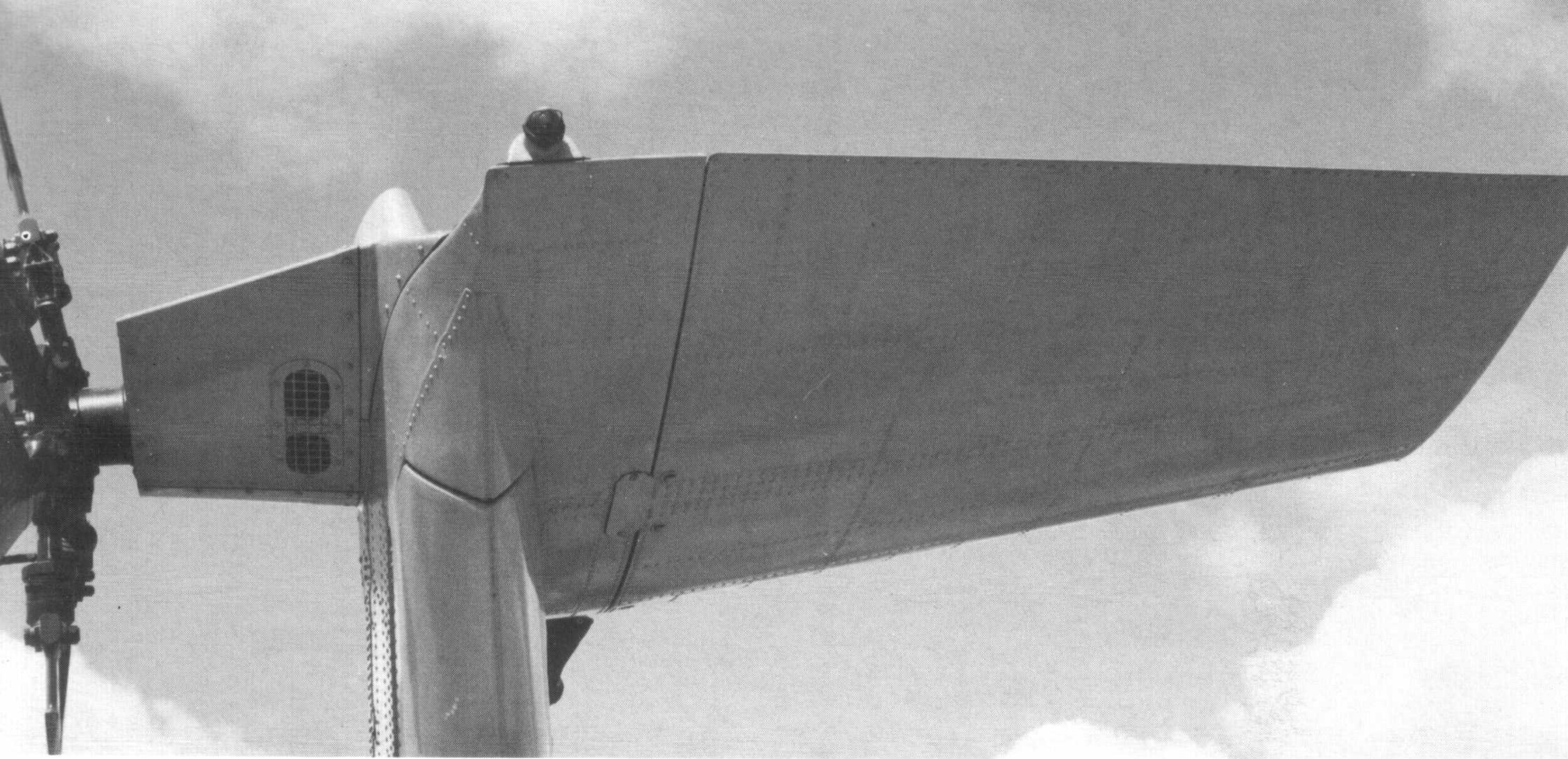


Above: The semi-spherical observation window on the port side. All the cabin windows of the Sea King double as escape hatches, external release being effected by means of tabs located in one of the bottom corners. The fitting above and to the right of the window is a picketing point for lashing the main rotor when the blades are folded.

Below: The Sea King's tail pylon folds to starboard (the RAF machines have inherited this naval feature), the break line appearing in the centre of this photograph.
Opposite page: Rear aspect of XZ585, September 1984. Note the manner in which the five main rotor blades droop when the helicopter is at rest.







Above: The Sea King's tail rotor is fitted to port – there is no 'standard' position in helicopter design – and its single stabiliser to starboard. The tail navigation light can be seen mounted on the trailing edge of the stabiliser root.

Below: A view showing the tail rotor and the undersurfaces of the associated transmission fairing. The Sea King HAR Mk 3, in common with other variants fitted with uprated Gnome engines, has a six-bladed tail rotor in place of the original five-bladed unit.

Below right: The complexity of the tail rotor hub is evident in this photograph. The root of each blade is painted red, and although the blades are interchangeable each root bears an individual, colour coded stripe, matching the colour of the adjacent attachment bolts: clockwise, and beginning at the far

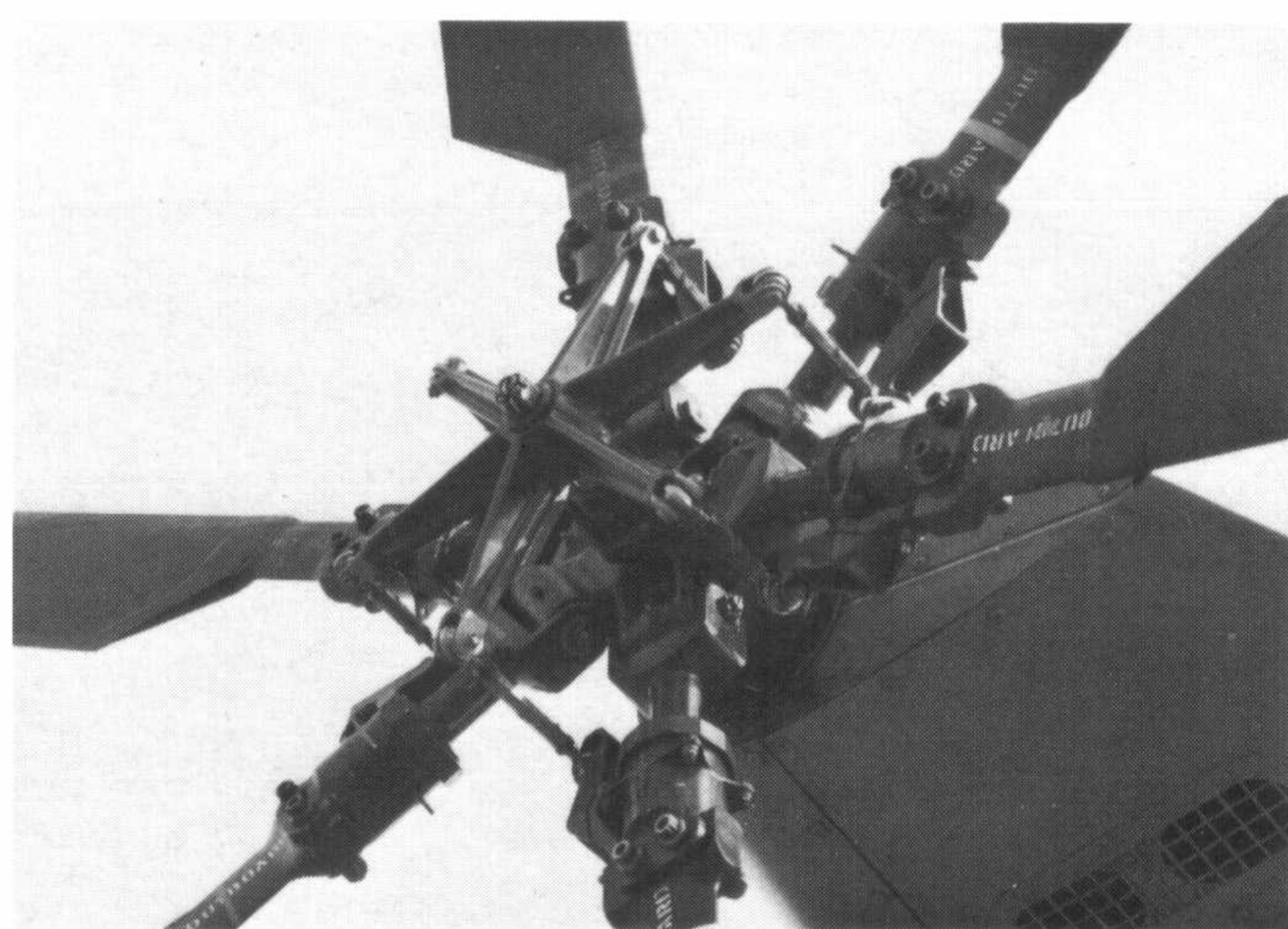
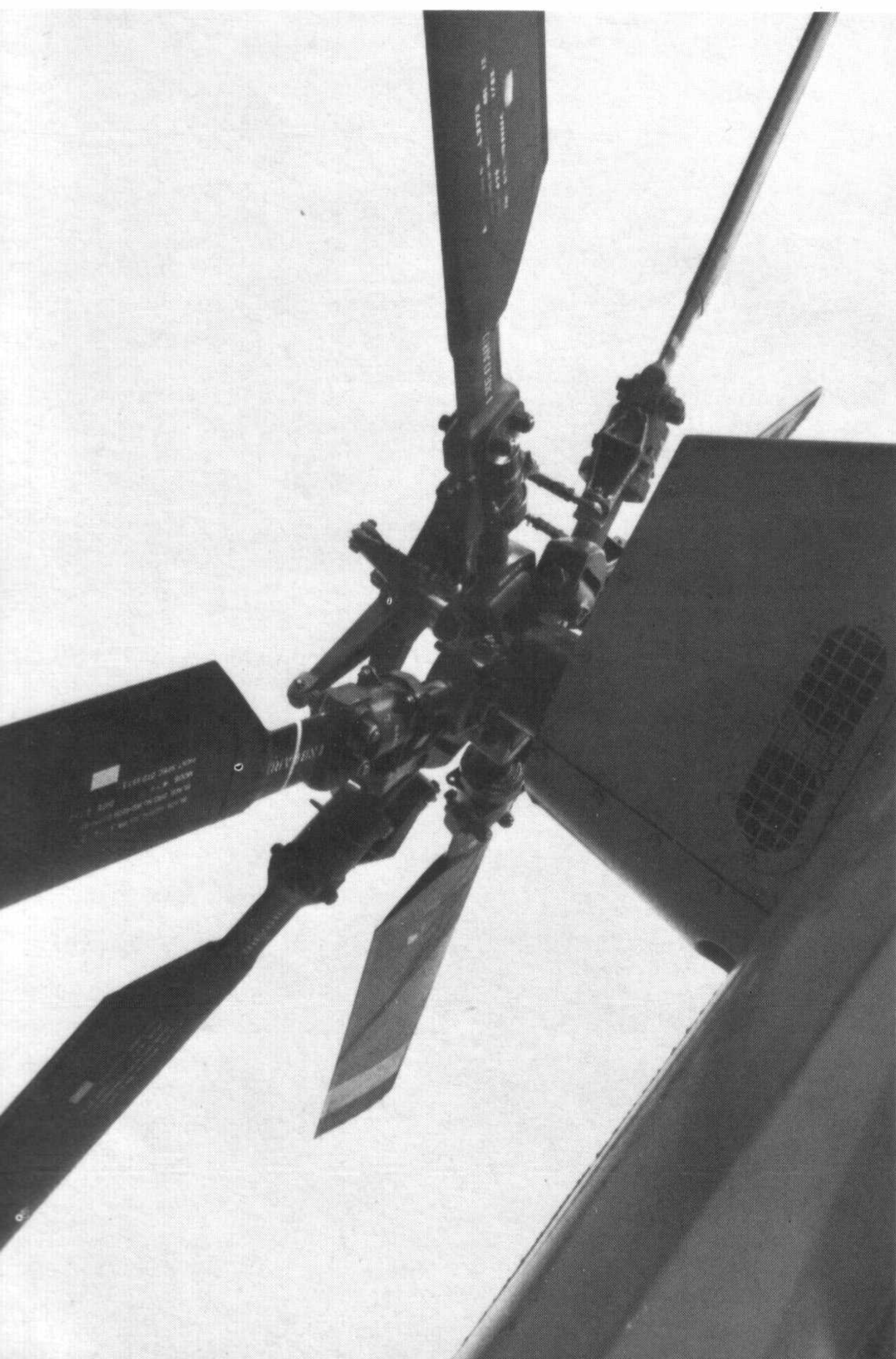
left in this view, the colours are black, green, yellow, red, white and blue.

Bottom right: The hinge point of the tail pylon; the pylon latch and its socket can be seen beneath the 'Danger' panel.

Opposite page top left: The Pye Olympic antenna is now standard fit on yellow HAR.3s based at Boulmer, Brawdy and Lossiemouth, but the associated onboard equipment, used on mountain rescue missions, is carried only when required. On the side of the fuselage, near the roundel, is one of the two VOR/ILS localiser aerials.

Opposite page top right: The starboard 'bubble' observation window; at the far right can be seen part of the cabin door.

Opposite page centre right: A view of the engine/transmission fairing, showing the oil cooler outlet at its base.

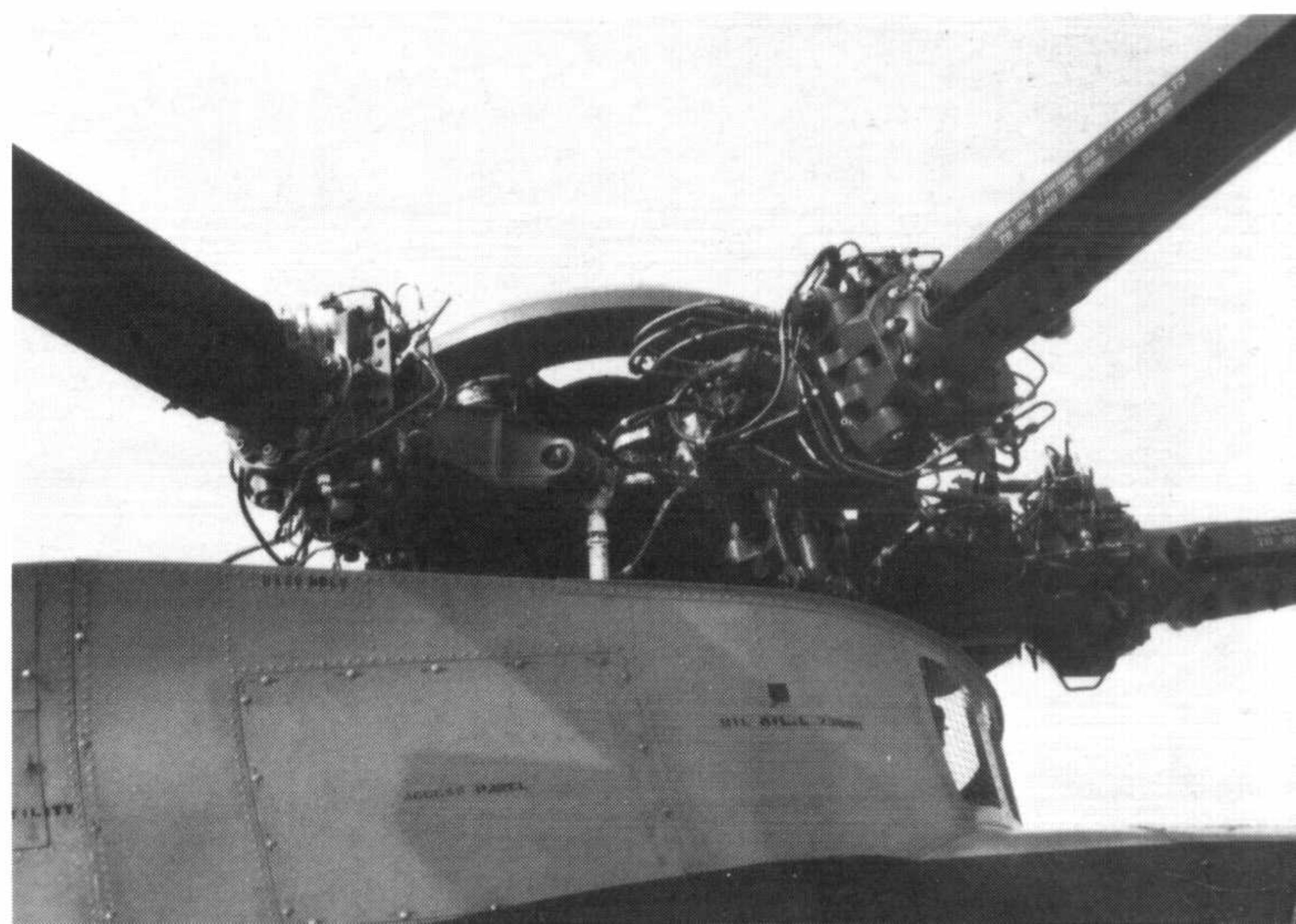
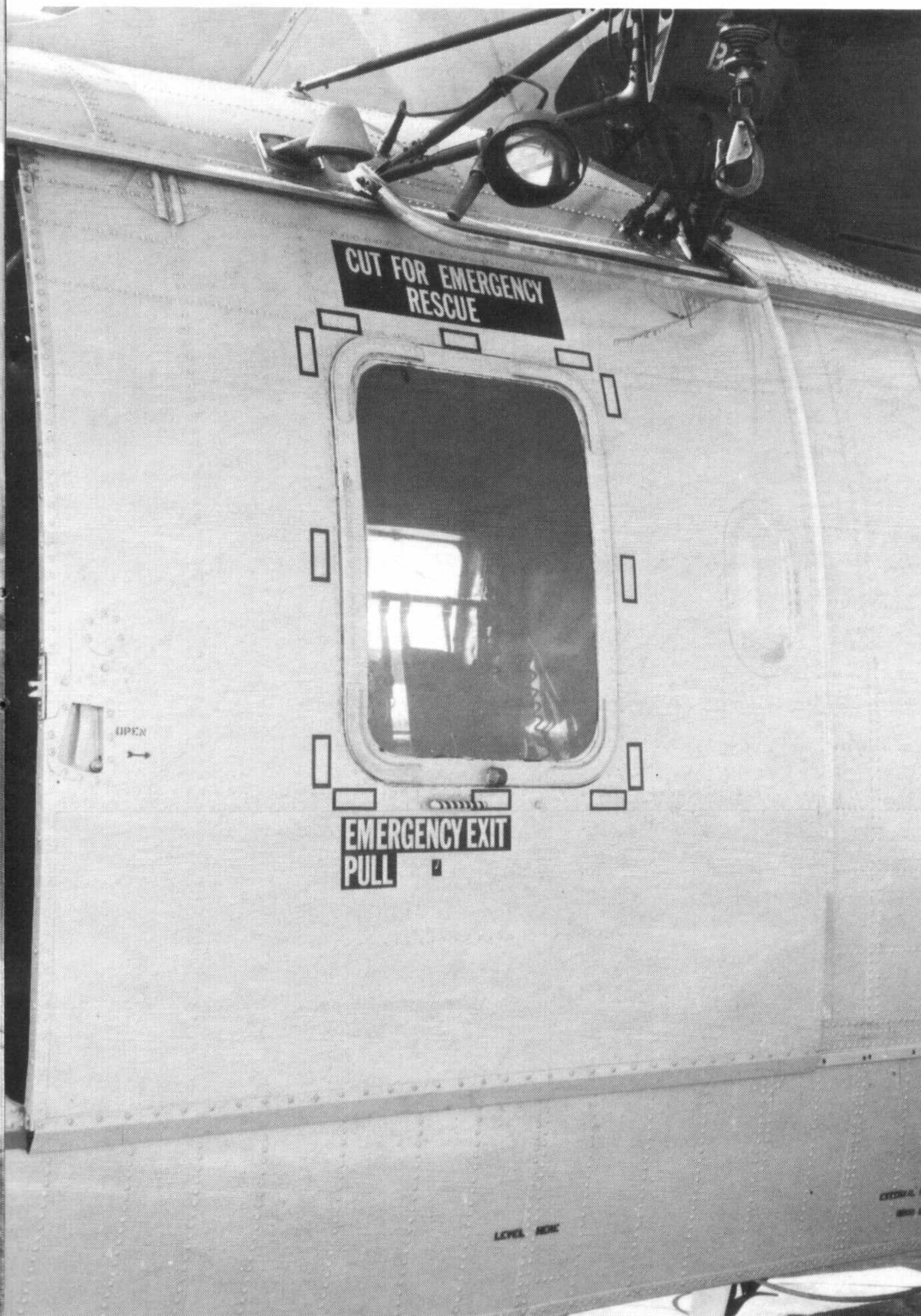




Below: The main cabin door slides forward to provide access, measures 5ft by 5ft 8in and is fitted with a window/escape hatch. The winch is situated immediately above the door.

Below right: The electrically operated, hydraulically powered Breeze winch (rescue hoist) is equipped with a 245ft cable and has a normal capacity of 600lb; it can be controlled either by the pilot (70ft/min fixed speed) or by the winchman/load-master (up to 200ft/min variable speeds). It is fitted with a movable spotlight and below, fixed to the airframe, are a grab handle and a cargo door light. Originally painted yellow to match the main colour scheme, the winches are now black to render exhaust stains inconspicuous.

Bottom right: Rotor hub detail. The five main blades have a hydraulically powered spreading and folding facility.





Above: Sea King XZ591 in the maintenance hangar at RAF Finningley, February 1985; note the pair of feet projecting from the access panel in the lower fuselage! This grey-finished machine shows the low-visibility version of No 202 Squadron's emblem, the mallard appearing in broken black outline. The red panel beneath the cockpit informs personnel that the helicopter has no internal power supply, whilst potential hazards such as the two pitot heads are tagged to make them more noticeable.

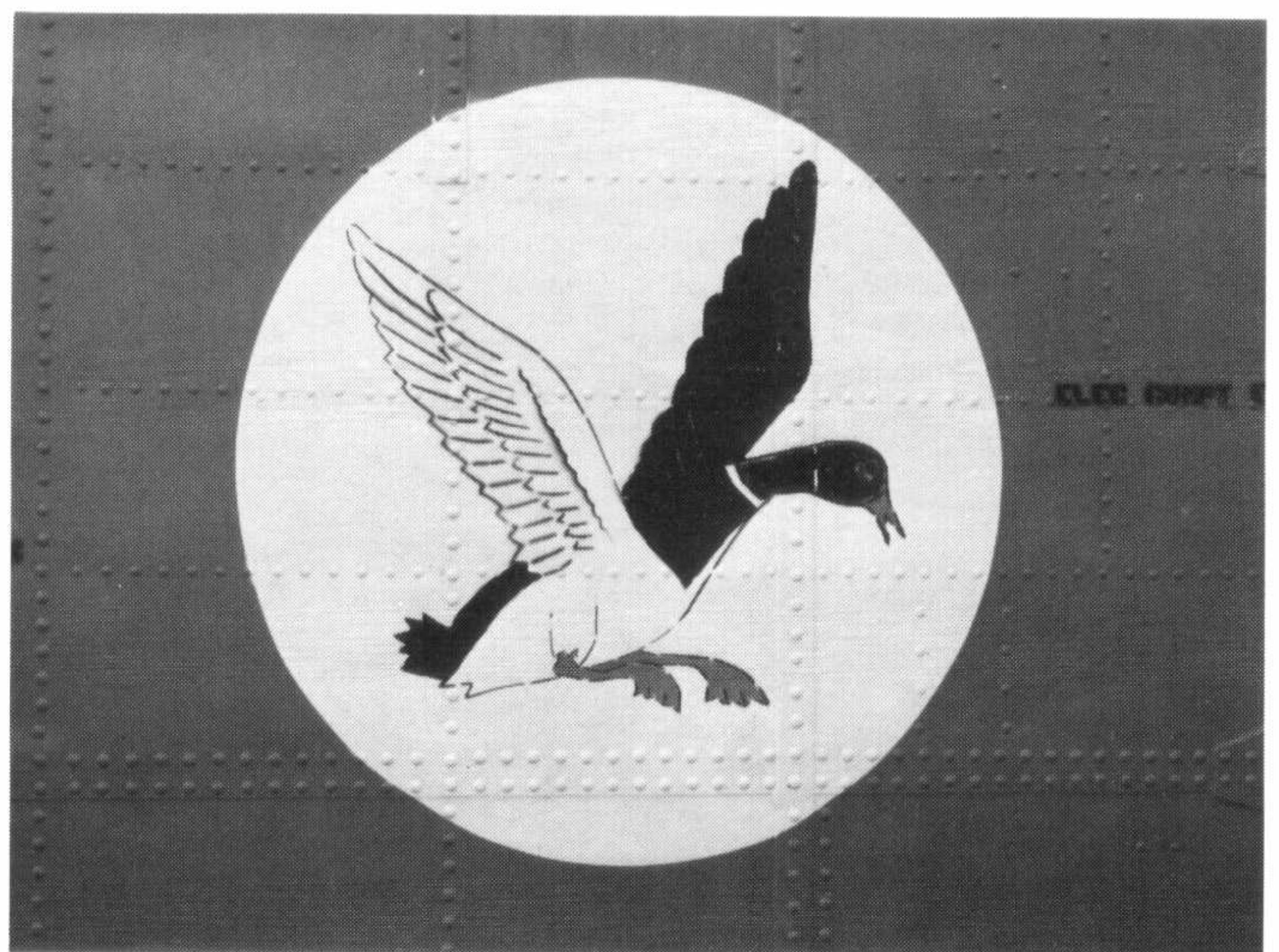
Below left: Sea King XZ596 has its avionics bay checked out prior to a test flight; the AC connecting point for the ground power equipment is clearly illustrated. The external cable running aft from the cockpit area is the foot-operated mechanical release for the underfuselage cargo sling.

Below right: A detail view of the No 202 Squadron emblem, the male mallard or wild duck, borne also on the port side, on the lower section of the personnel door. On yellow-painted

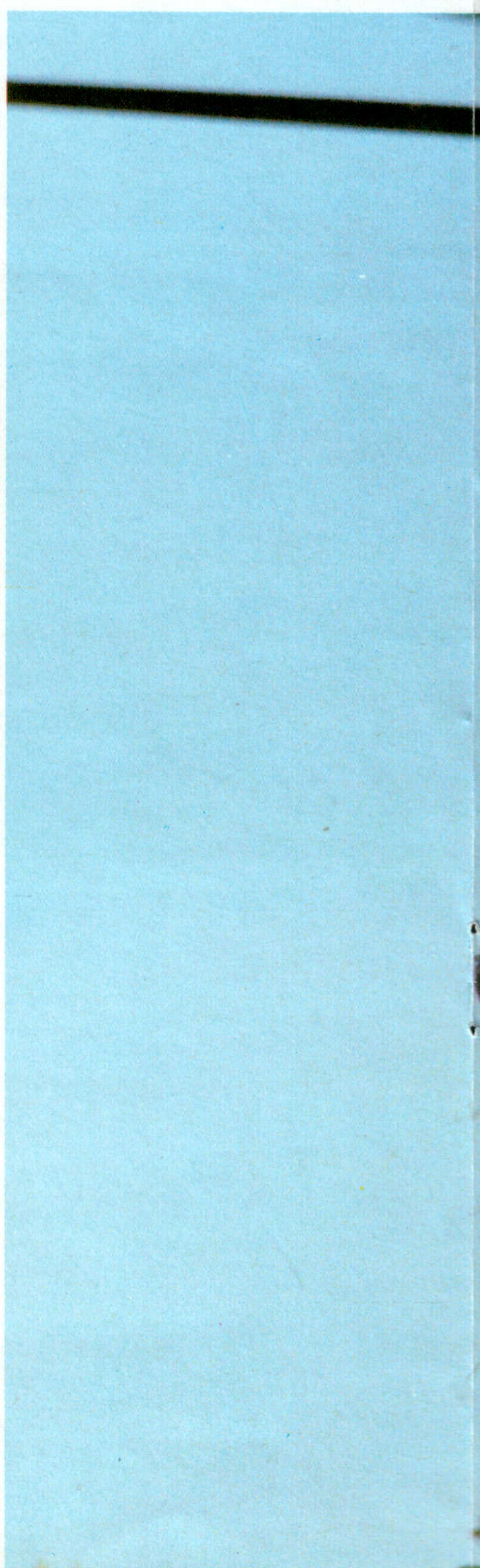
Sea Kings the bird appears in natural colours backed with a white disc, but fastidious modellers will be quick to notice that not only the angle of the bird but also the location of the disc varies slightly from machine to machine. The black-outline version of the mallard is not invariably carried on the port side of grey-painted Sea Kings, appearing only on the starboard side on some aircraft. Note that almost every external fitting on the Sea King Mk 3 is identified by black stencilled lettering.

Opposite page top: A view of a Sea King HAR.3 which emphasises the spotless condition in which the helicopters are kept whilst on duty. Cleanliness of the aircraft is of course more than usually necessary owing to the salt-laden (and thus potentially corrosive) environment in which the helicopters frequently work.

Opposite page bottom: XZ596 caught by the camera a split second before lift-off: notice that the undercarriage oleos are at full extension. Two of Finningley's hangars form a backdrop.









Far left: 'Grey Whale' XZ592 shortly before taking off for a sortie, Brawdy, September 1984. The Dark Sea Grey paint finish of these helicopters was generally applied straight over the original Golden Yellow (that is, without a primer base), and quickly weathered, especially around the forward fuselage.

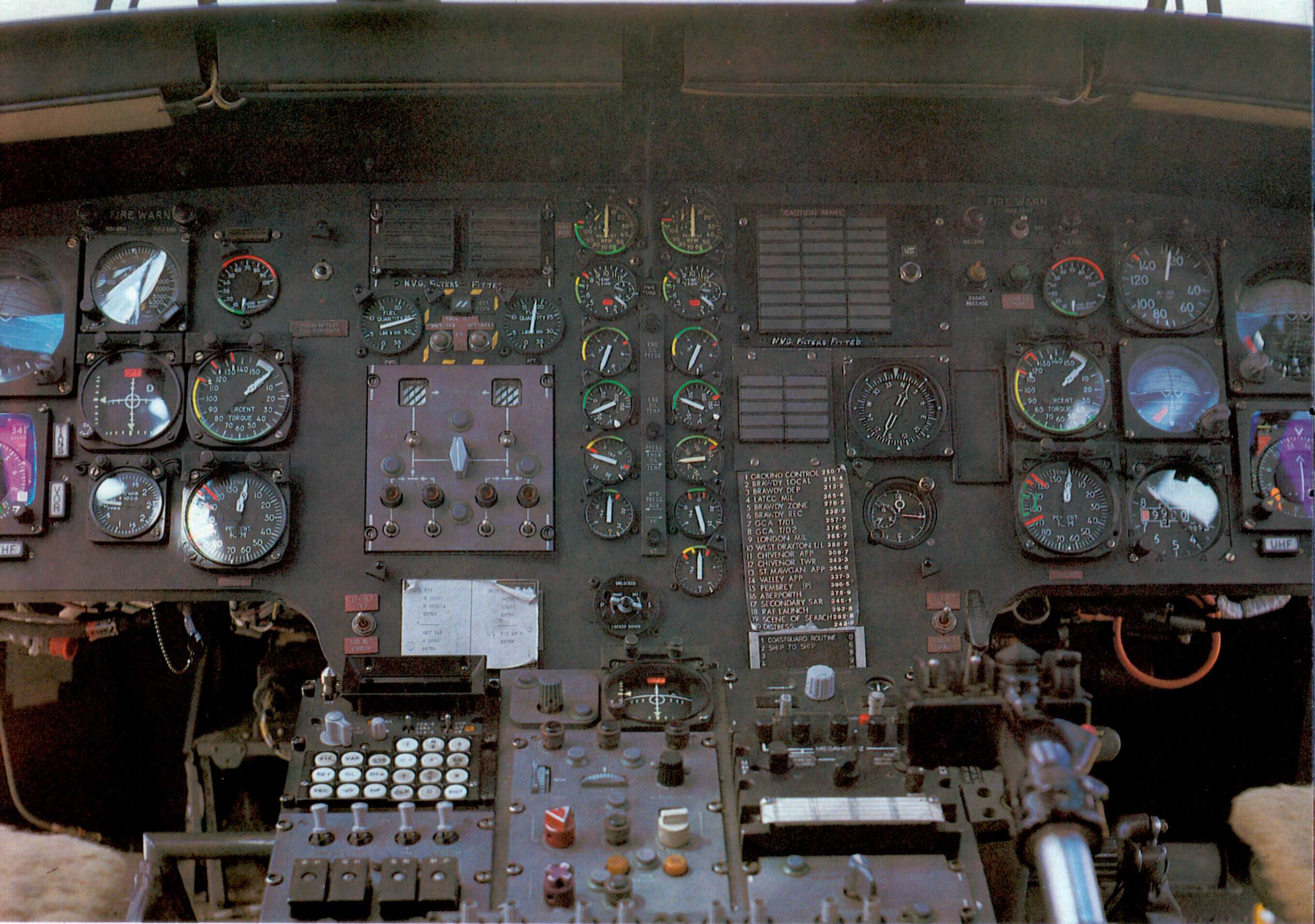
Far left, centre: XZ594 at RAF Finningley, February 1985, displays its No 202 Squadron emblem. The upper section of the personnel door is in primer finish.

Far left, bottom: A Sea King undergoing major overhaul at RAF Finningley. The rotor blades, engines, tail pylon, undercarriage sponsons and main radar equipment have all been removed, and the open access panel by the tailwheel reveals more of the original paintwork. Not evident here is the fact that the interior of the fuselage has been virtually gutted.

Left: A Sea King HAR Mk 3 attached to 'B' Flight, No 202 Squadron, at Brawdy in September 1984. The rotor blades are lashed down and the ground power equipment connected.

Below: A dramatic photograph of a 'Grey Whale' moving off. Note the lifting frame beneath the hull and the HF antenna wires along the port side. *Westland Helicopters Ltd*







Opposite page top: The main instrument panel of XZ585. Primary flight instruments are duplicated for the pilot (right) and co-pilot, with engine instruments and fuel control and warning/advisory panels situated in between; below, the interseat console carries the TANS navigation computer, Automatic Flight Control System (AFCS) and radio switches. Note the frequency card in its rack to the right of the oil/hydraulic pressure indicators and the NVG light strips on the underside of the coaming.

Opposite page bottom: A Norwegian Sea King Mk 43 shows its very attractive colour scheme in appropriate fjordic surroundings. The export SAR Sea Kings supplied by Westland are broadly very similar to the RAF's HAR Mk 3s, although much of the communications and navigation equipment differs, to match customer requirements – and there has even been a proposal to fit the West German Mk 41s with Kormoran anti-ship missiles, which could give the term 'SAR' a rather different meaning!

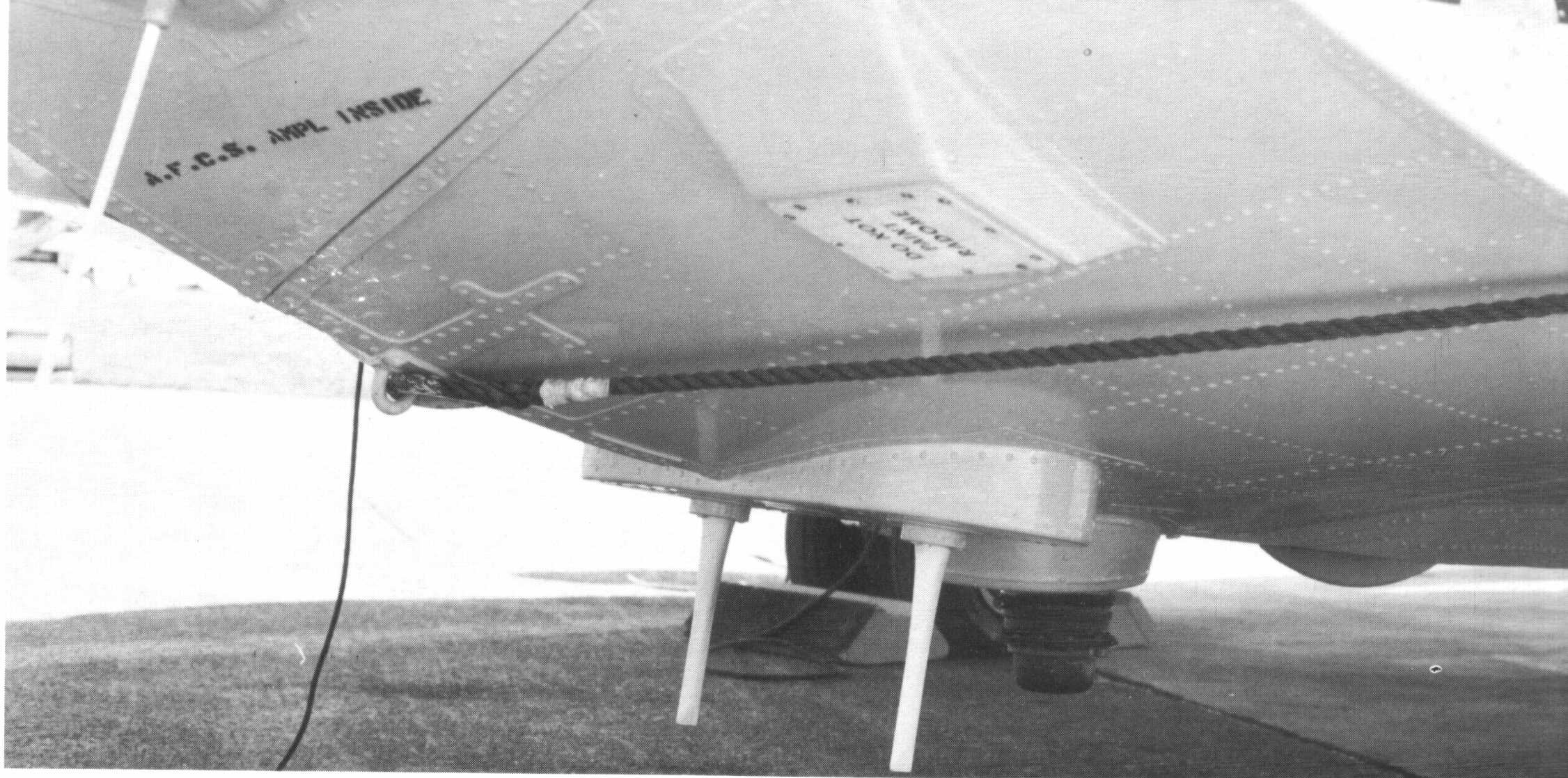
Westland Helicopters Ltd

Above: Details around the starboard engine casing, with a blanking plate installed over the exhaust outlet. The rectangular cooling grille to the right serves also as a fire point.

Left above: FOD shield, intake and pitot static pressure head, starboard side.

Left below: The starboard downward-vision cockpit window.





Opposite page top: An early photograph of an HAR.3, showing the arrangement of antennas and external equipment beneath the fuselage which are featured in close-up in the illustrations that follow. Some modifications have been made since this photograph was taken, but the basic layout is essentially unchanged. *Westland Helicopters Ltd*

Opposite page bottom: A second 450W controllable spotlight (for the co-pilot) is fitted beneath the cockpit, acting as a landing lamp; immediately behind this is a fairing carrying twin antennas for the Chelton UHF homing equipment, whilst to starboard is one of the two antennas for the Smiths/Honeywell AN/APN 198 radar altimeter.

Above: Another view of the UHF homing aerials, with the port-side radar altimeter fairing and the sea anchor cable also visible. Behind the antennas is the ventral anti-collision lamp, and beyond that the fairing for the Decca 71 doppler radar system.

Below left: The UHF homers, anti-collision beacon and

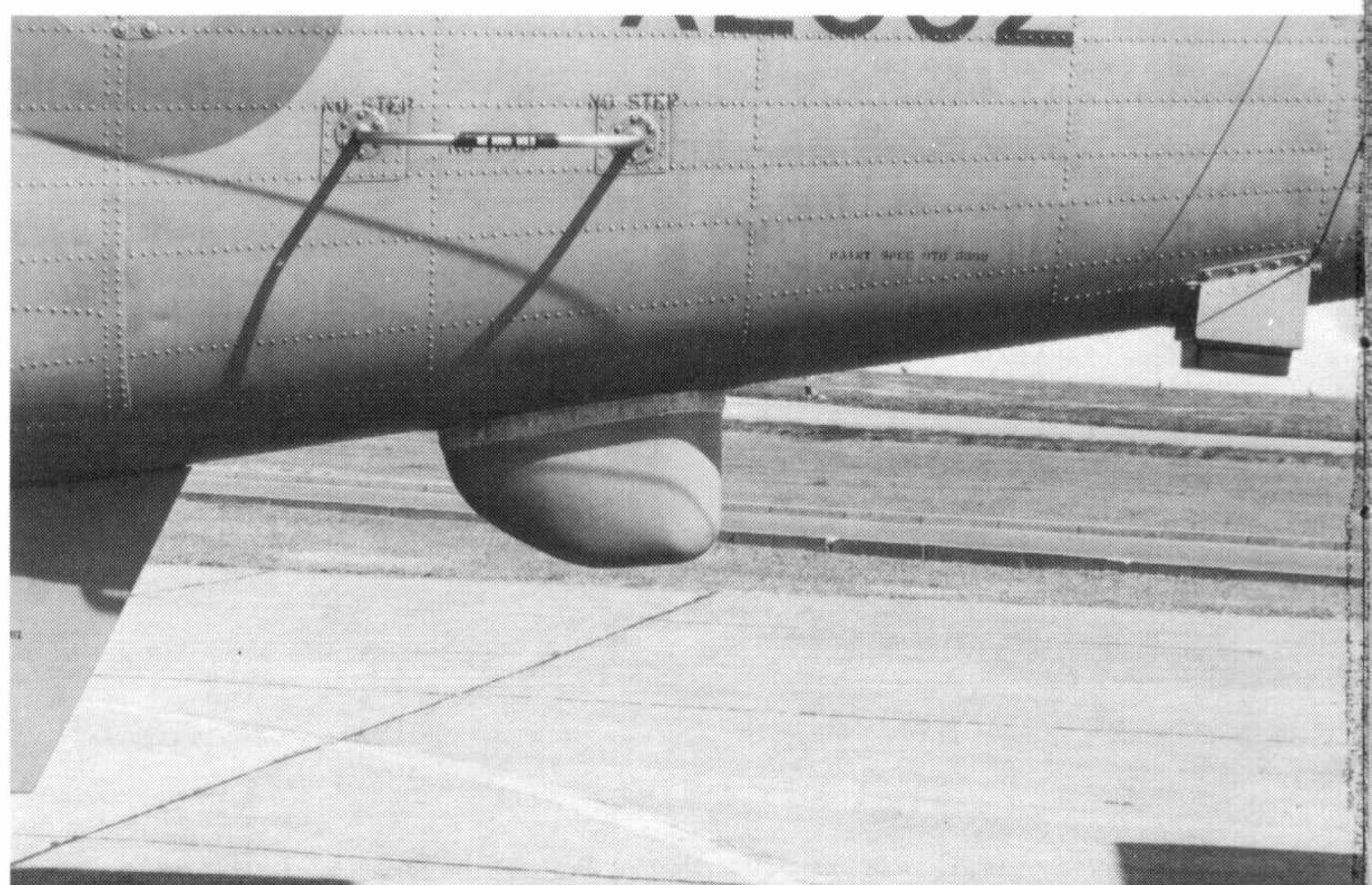
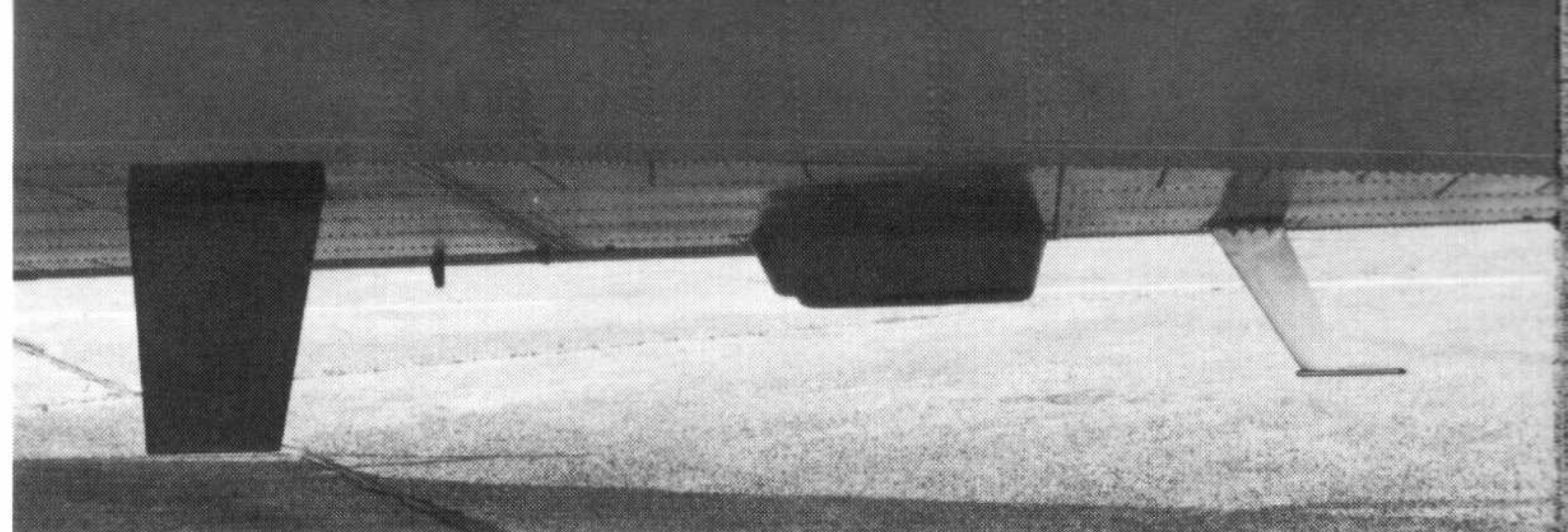
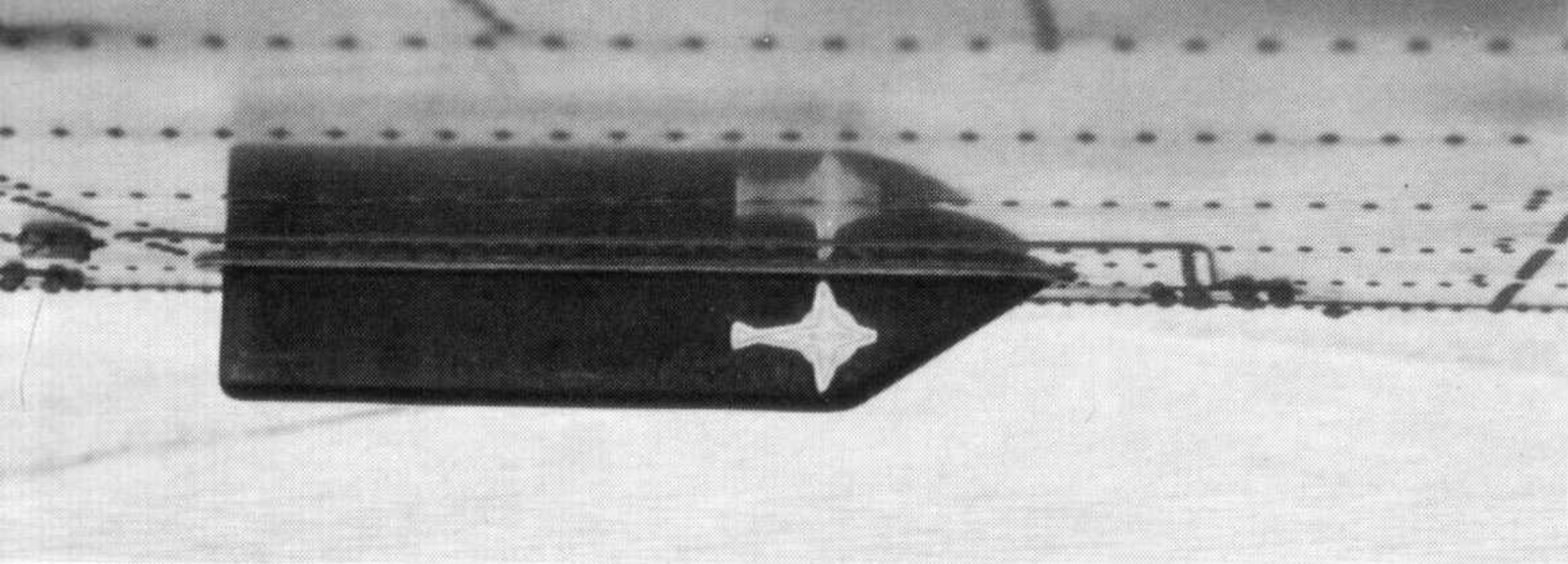
doppler fairing as seen from the starboard side.

Below right: The foot-operated mechanical sling release cable beneath the starboard sponson. The 'push-in' footstep is, as elsewhere, identified with a vertical white stripe and a black-painted surround.

Bottom left: The Sea King HAR.3's cargo sling, which can handle loads up to 6000lb in weight, features a Semi-Automatic Cargo Release Unit (SACRU) which is electrically operated from the cockpit, or mechanically by the pilot if necessary. The SACRU is hauled by lanyard through the starboard cabin wall when not in use and is stowed under the fuselage on the port side. The cargo sling has been replaced on the 'Grey Whales' by a rigid lifting frame with a capacity of 8000lb. The circular fairing on the lower fuselage surface marks the position of the Navy Sea Kings' dipping sonar housing.

Bottom right: Detail showing the underslung load hook attachment on the port side.





Top left: ILS Marker aerial, located slightly to starboard of the fuselage centreline.

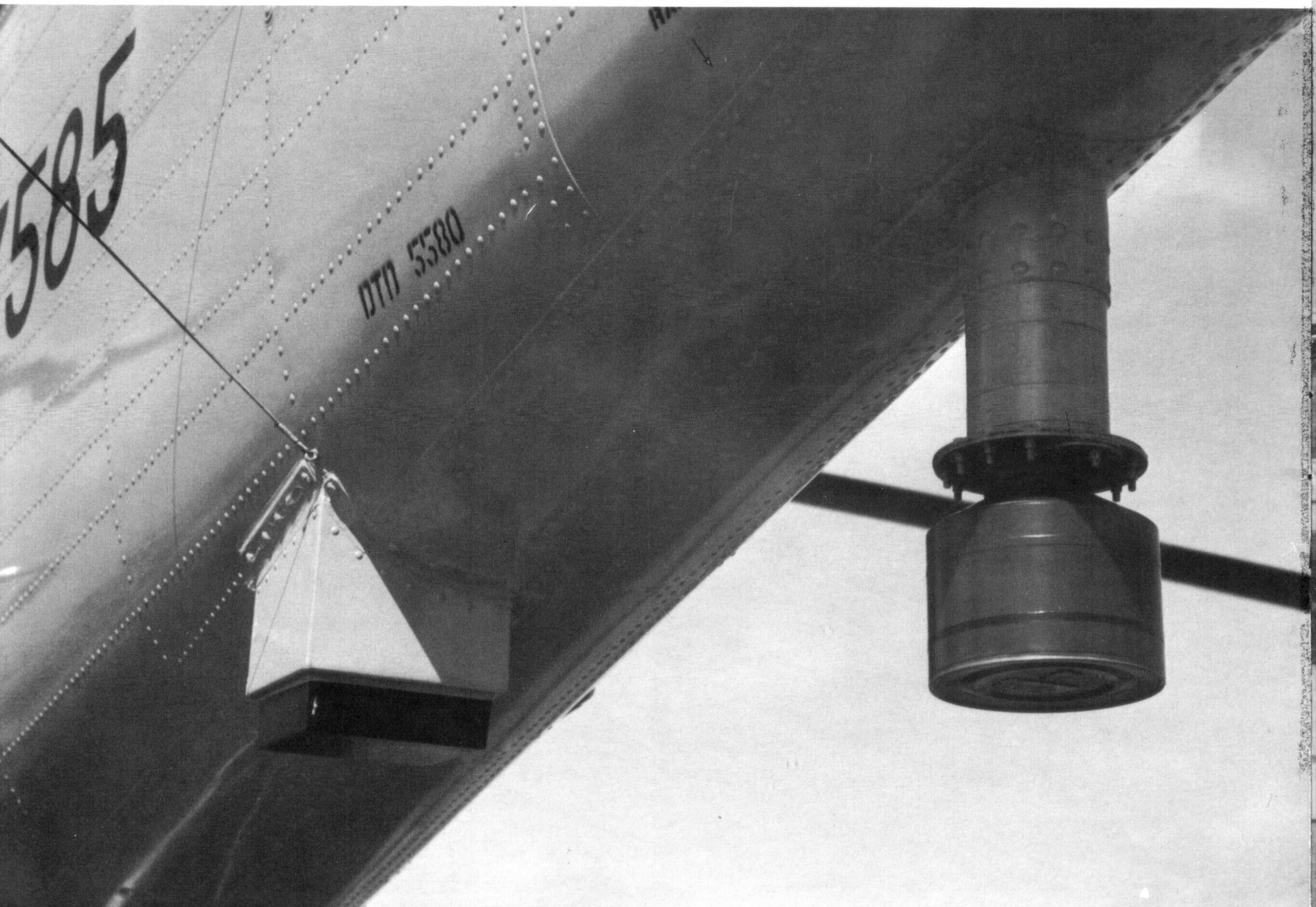
Top right: Antennas fitted beneath the rear fuselage, viewed from the port side: (left to right) UHF/VHF (AM) radio, lower IFF, ADF loop, and VHF (FM) radio (Pye Westminster).

Above left: The Decca Mk 19 Navigator 'box', aft on the starboard side, with the ADF sense aerial fitted along the chine below. Note the refuelling point to the left of the main cabin door, with a black-painted surround. The Sea King has a total of six bag-type fuel tanks, all located beneath the cabin floor, split into two systems. The forward three tanks supply

the port engine and the after three the starboard, although some degree of cross-feeding is provided for.

Above right: 'Grey Whale' XZ592, showing the aft RWR fairing peculiar to these few helicopters; above it is the port-side VOR/ILS localiser antenna, and to the right of the photograph is the Omega navigation antenna. The last is a recent introduction to the RAF Sea King, and not all the helicopters in the fleet are equipped with it.

Below: Omega antenna installation as fitted to XZ585, with I-band transponder (standard fit, but now removed from the 'Grey Whales').



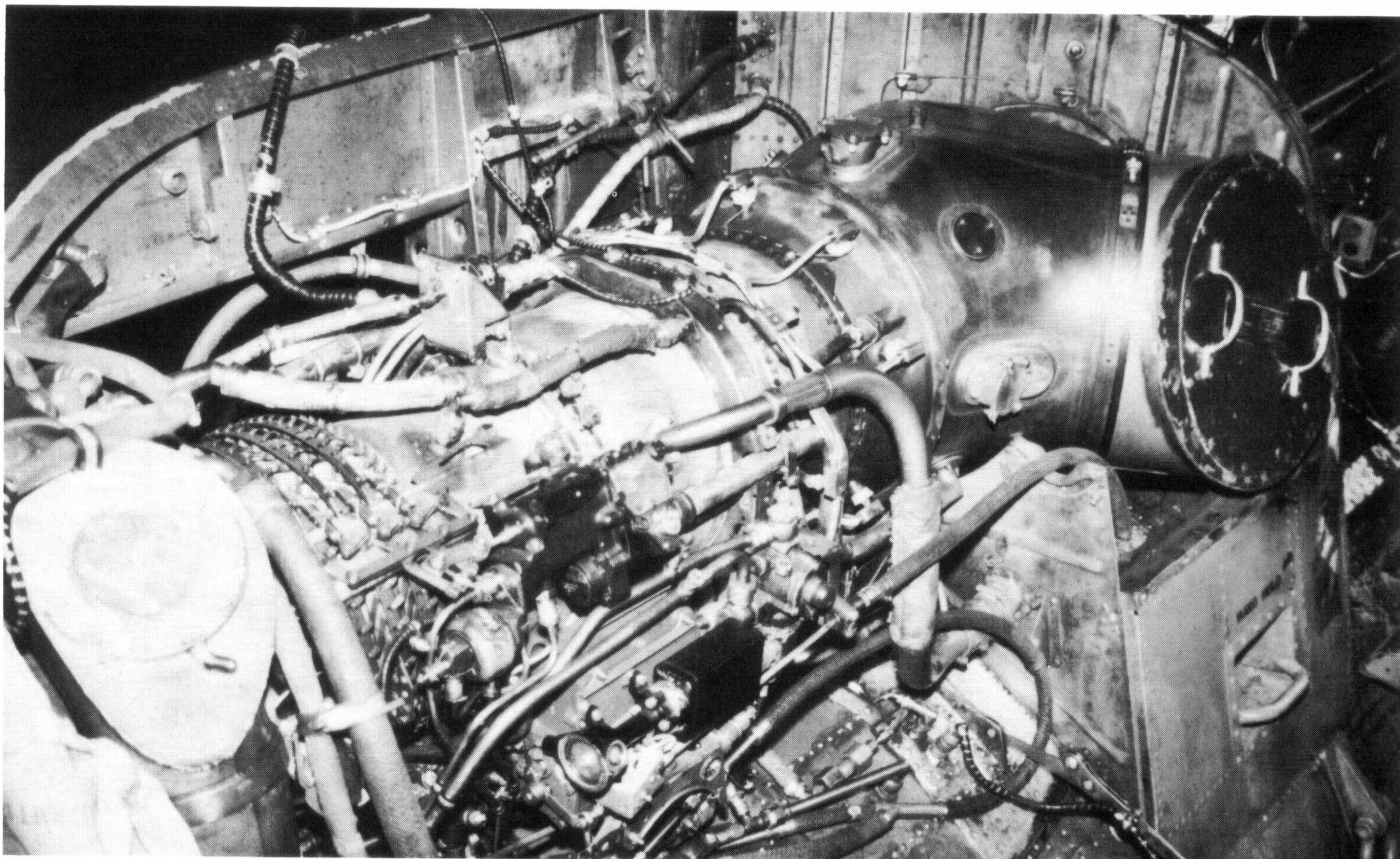
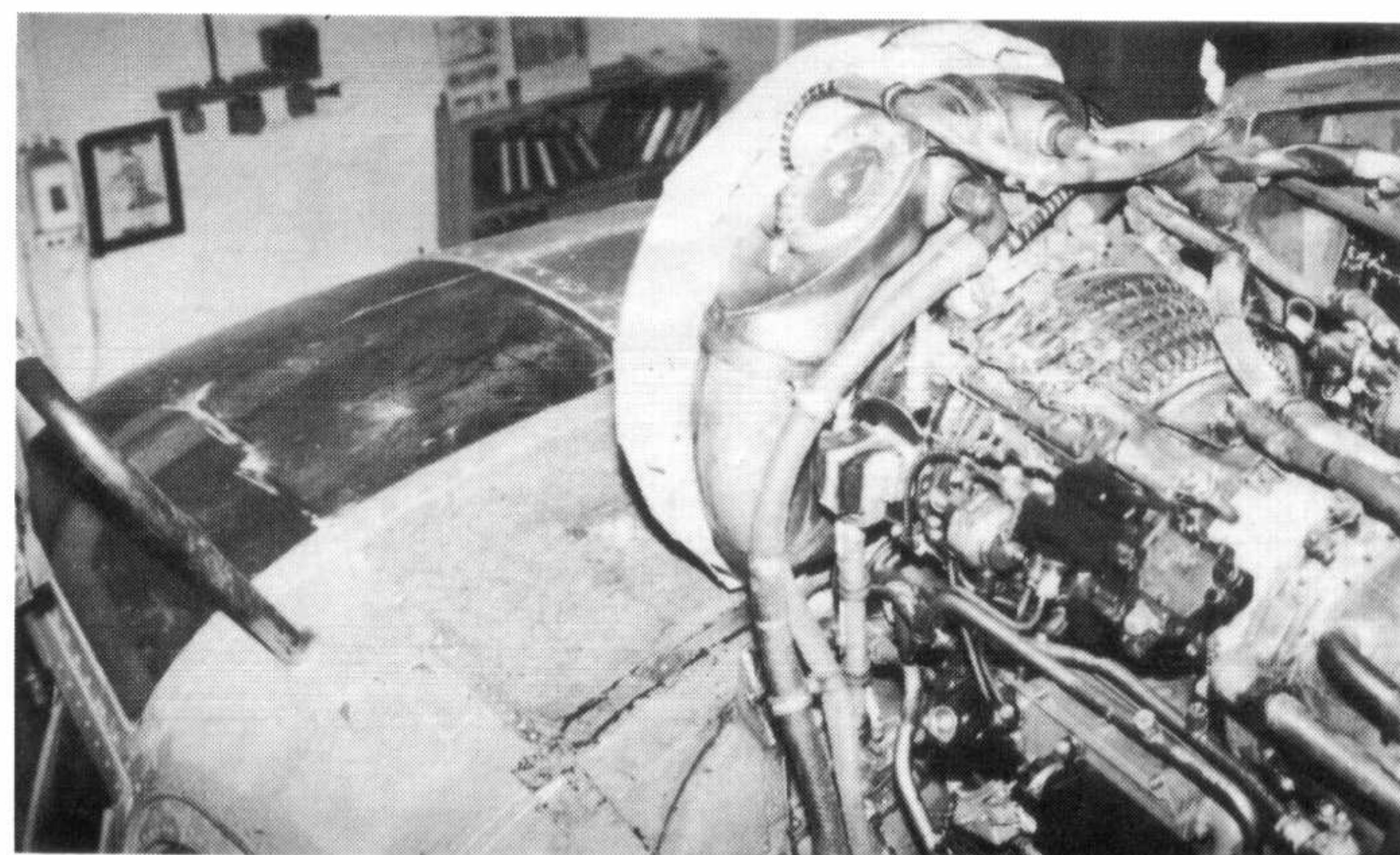
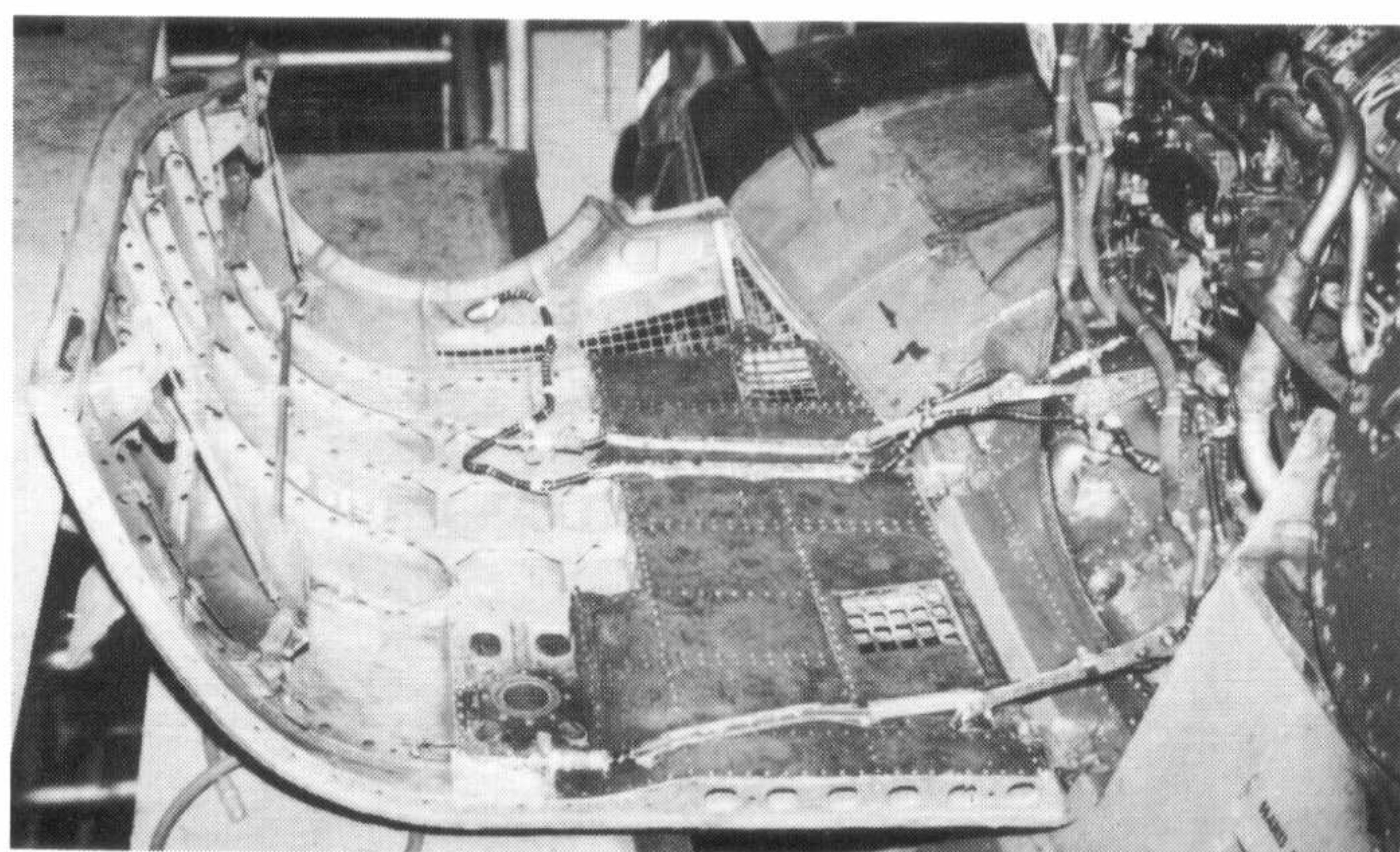
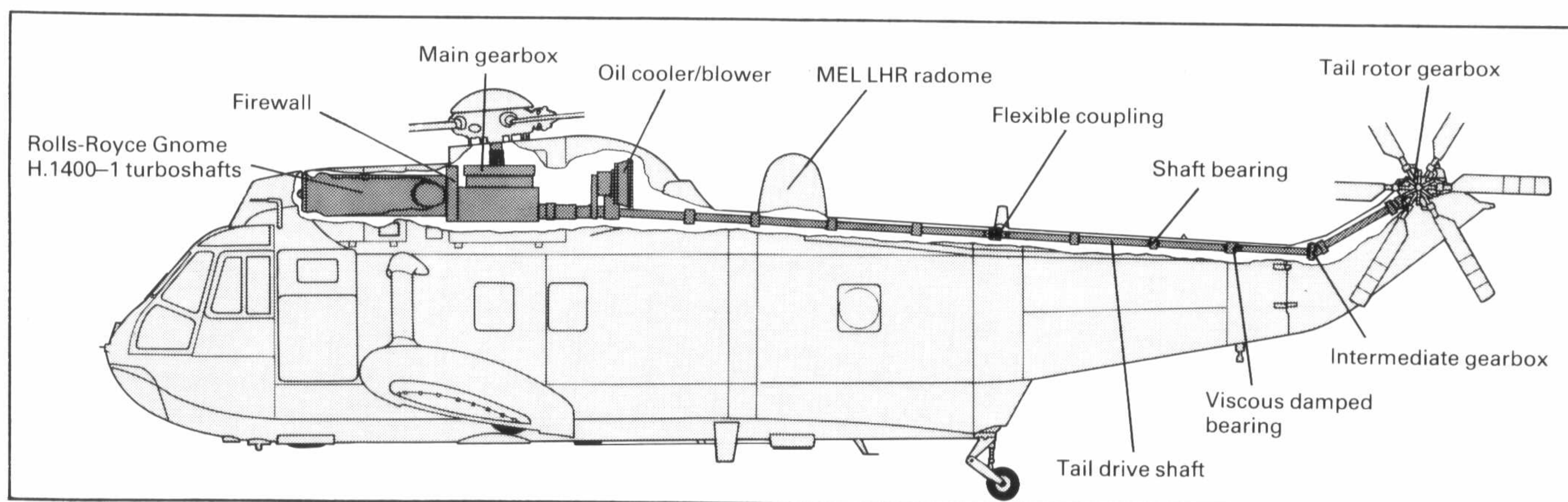
POWERPLANT

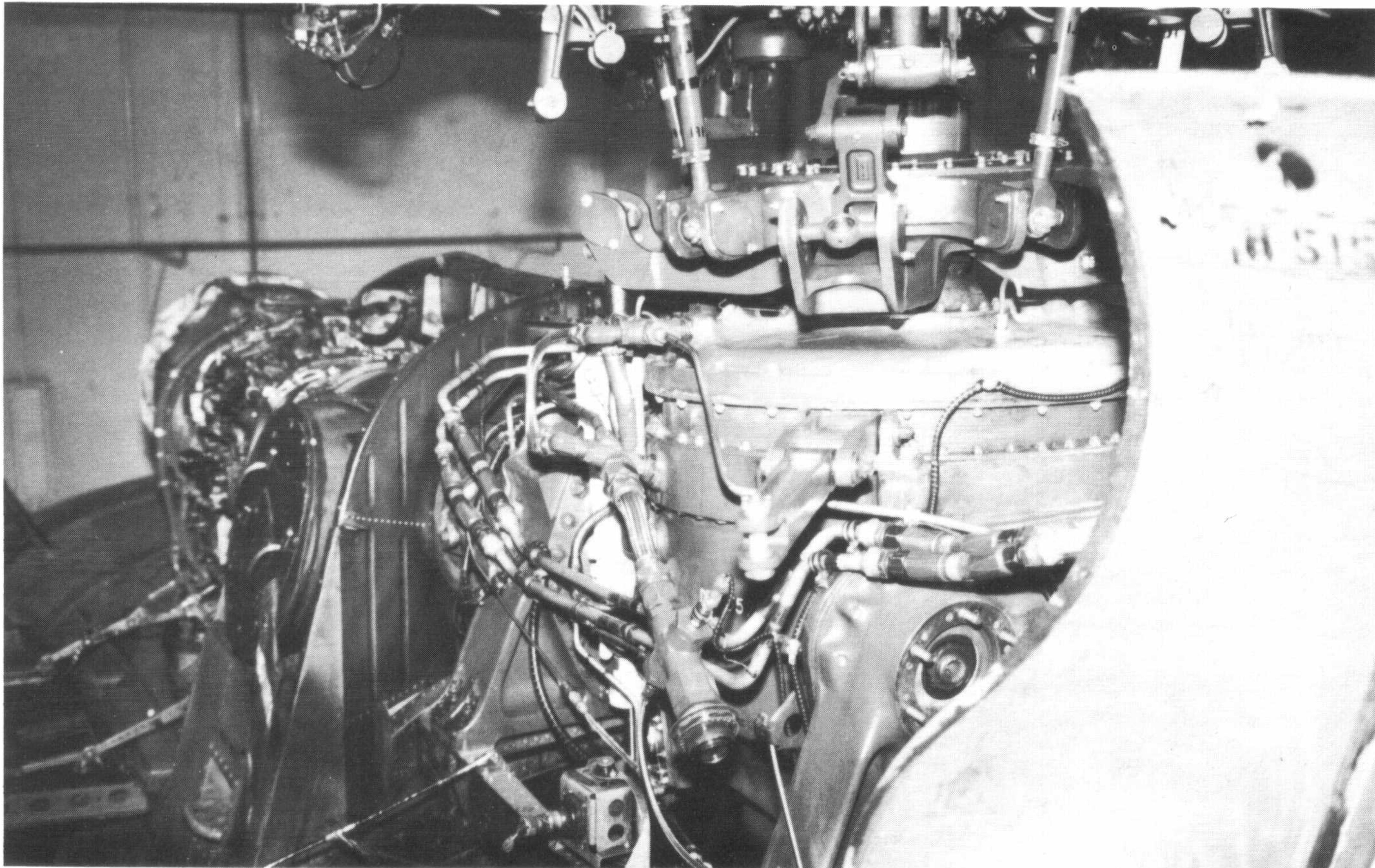
Below: A schematic diagram showing the layout of the Sea King's transmission system.

Centre: Two views of the Gnome turboshaft installation on the port side, the engine bay servicing platform hinged downwards to permit inspection and maintenance. Note the blanking plate fitted over the exhaust outlet and the protective

material covering the intake. As elsewhere on 'Grey Whales', much of the original yellow paintwork is revealed when panels are opened up.

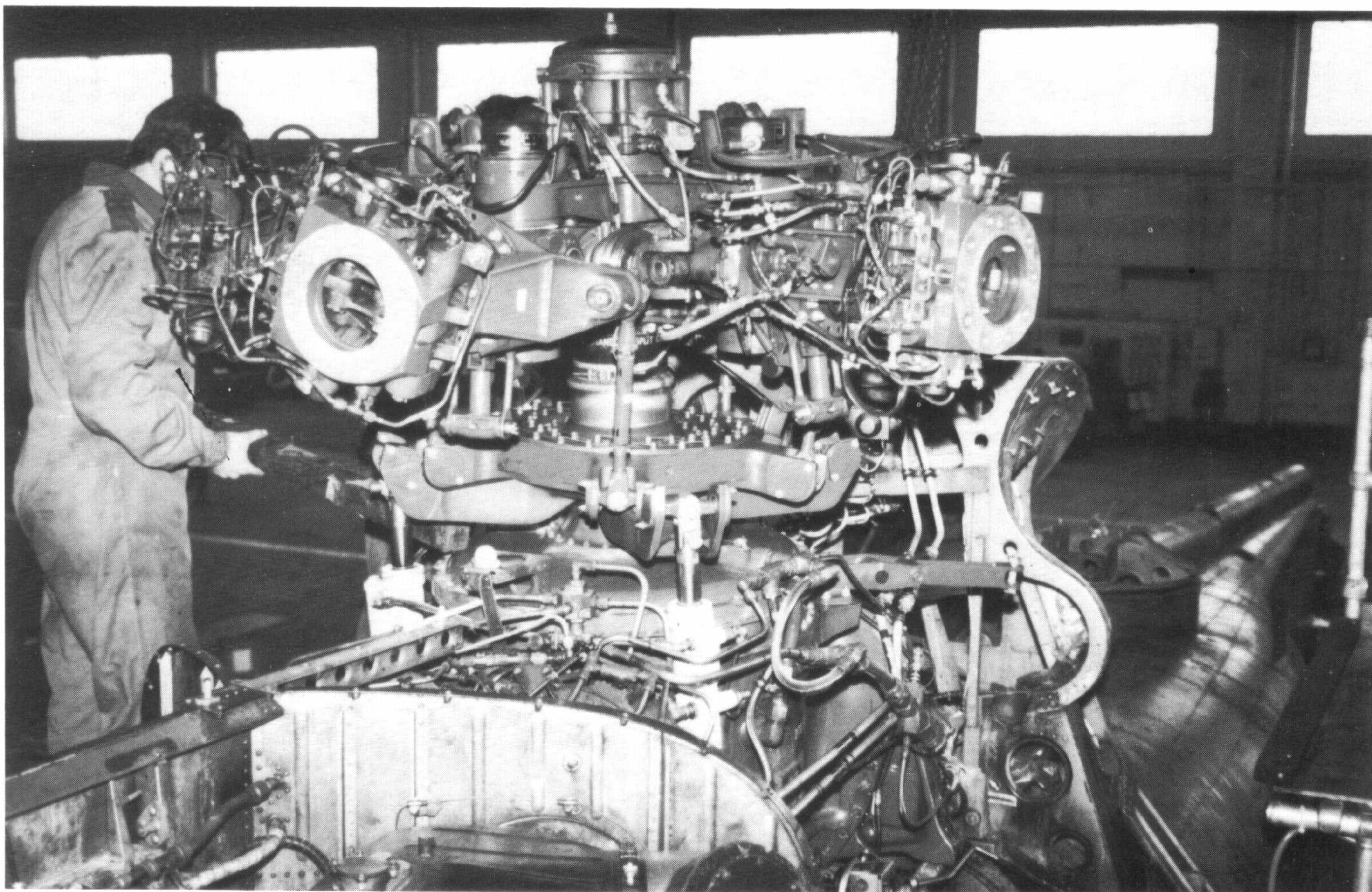
Bottom: The compact Rolls-Royce Gnome is no stranger to the Royal Air Force, an earlier version of it having powered the Wessex and Whirlwind helicopters.





Above: The main gearbox interconnects the two Gnome turboshafts to the main rotor pinion via two-stage reduction gear. The engines are separated from the gearbox by a firewall, and a further firewall is installed between the engines themselves. The transmission housing also hinges downwards for access.

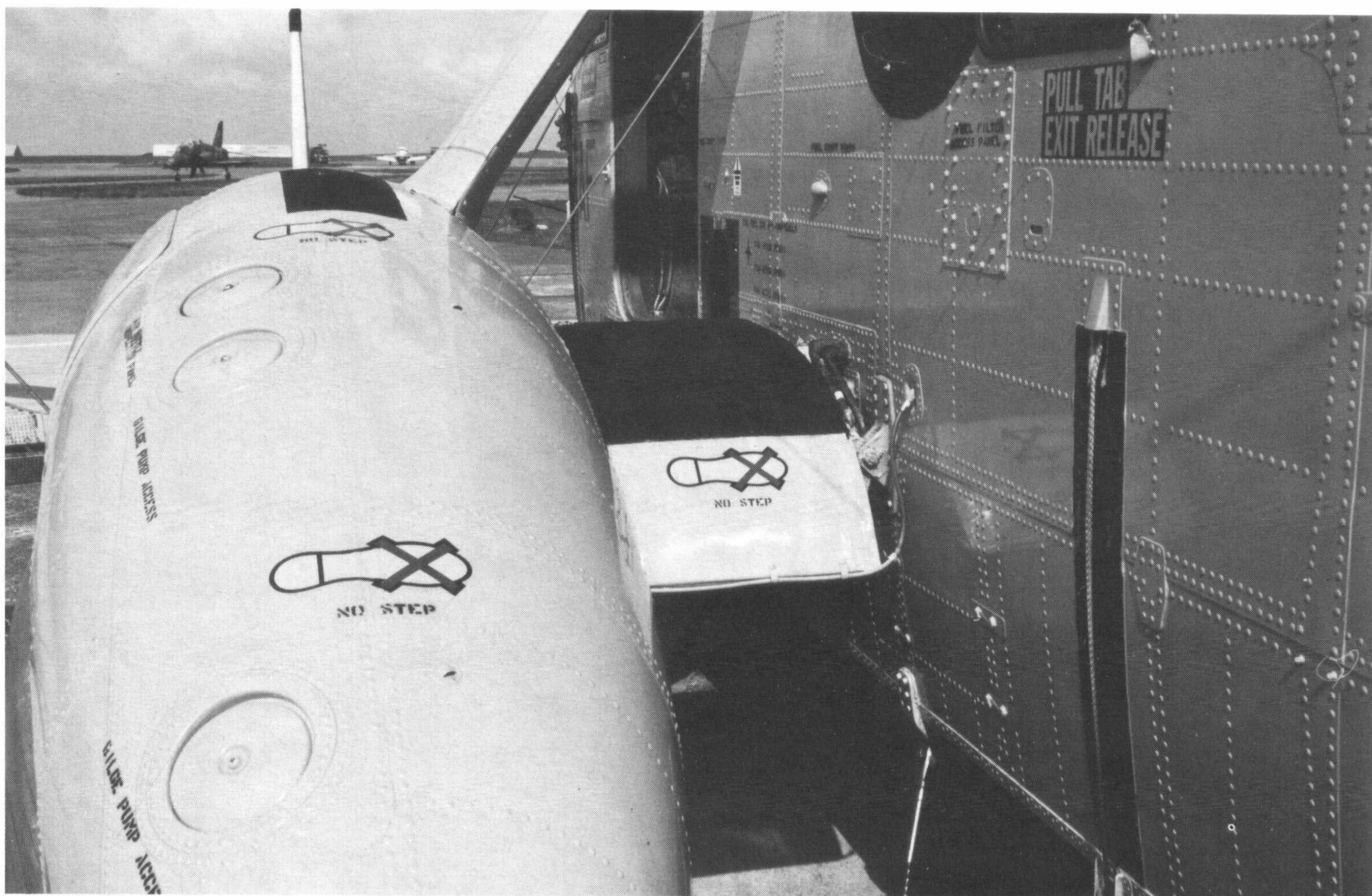
Below: The complexity of the main rotor head – a nightmare for model makers but presumably not so for maintenance personnel! The Sea King's main rotor blades have a normal turning speed of 209rpm; the tail rotor is rather faster, at 1280rpm. The port engine can run with the rotors stationary, via an accessory freewheel unit, to power accessory systems.

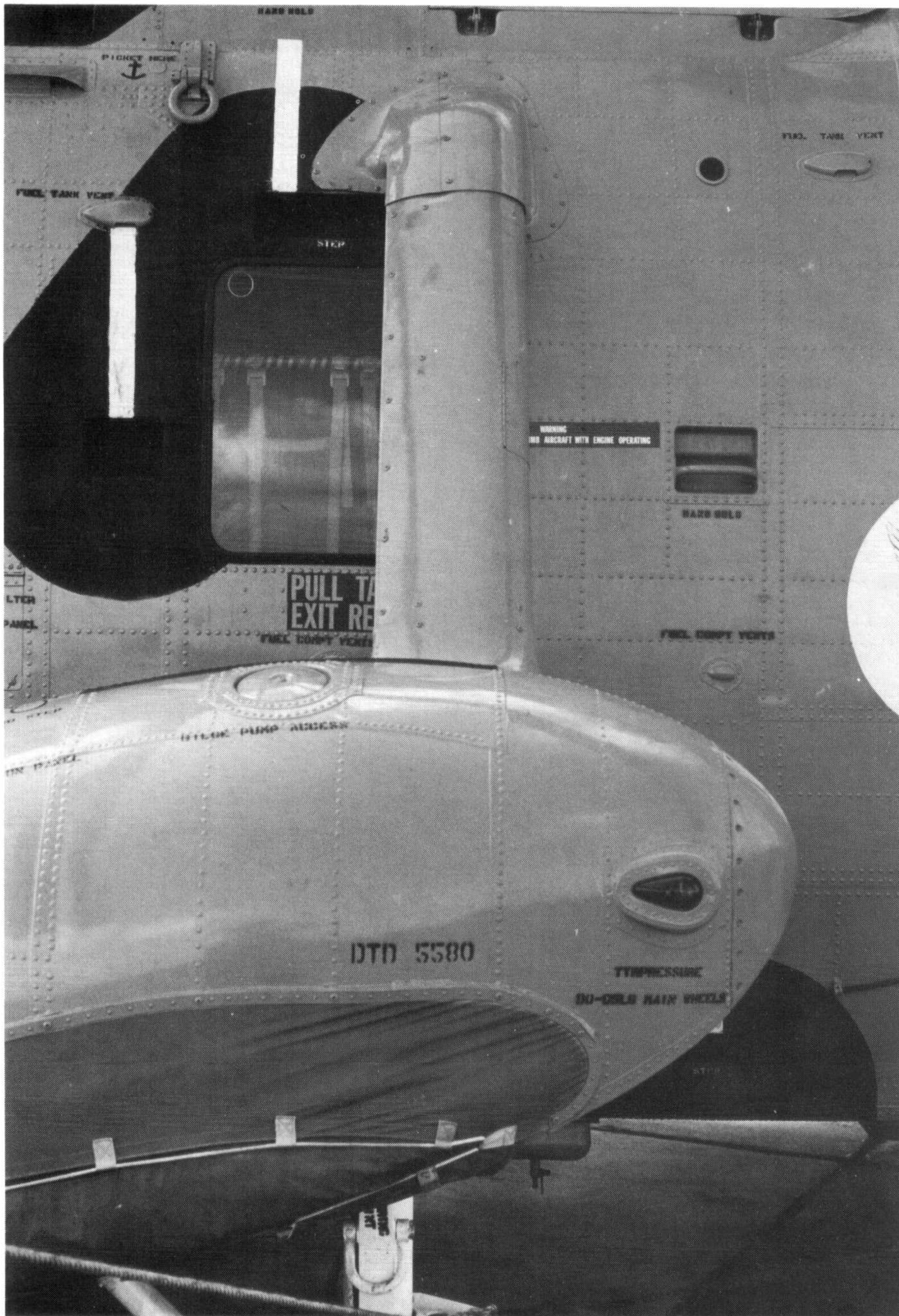


UNDERCARRIAGE

Below: The Sea King's main landing gear is semi-retractable, the undercarriage legs folding rearwards into sponsons mounted on stub wings attached to the lower fuselage sides. Buoyancy bags are located within the sponsons, as shown. Note the HF transmitter access panel.

Bottom: A view of the port-side sponson, showing the stub wing attachment. The aerial mast on top of the sponson provides anchorage for the HF wire which runs along the fuselage side. Walkway areas are treated with black, non-slip compound. Note the cargo sling lanyard to the right.





Left: A view of the starboard sponson, showing the position of the bracing strut and also the navigation lamp fitted at the forward end.

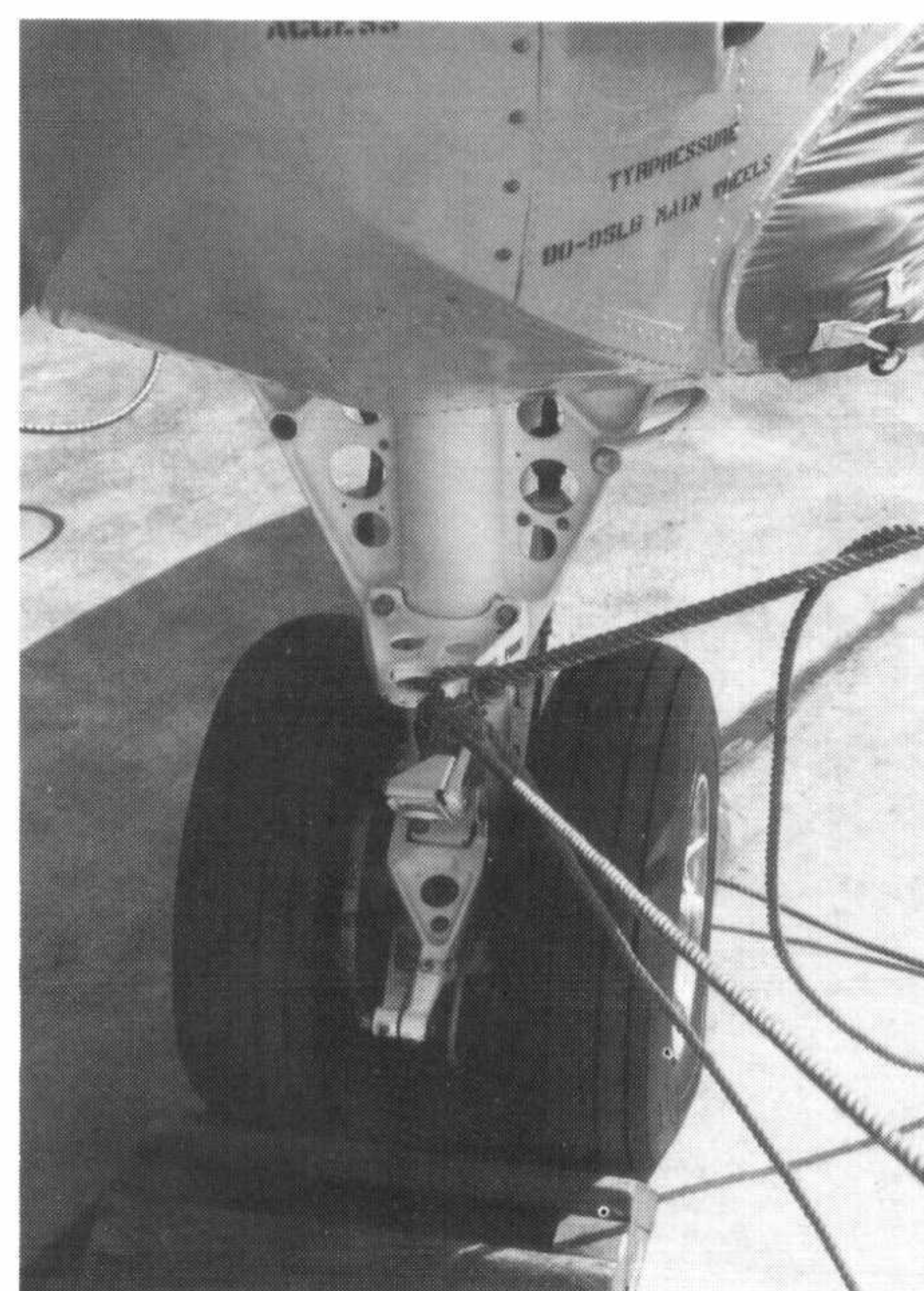
Below left: Each main undercarriage unit comprises two wheels linked by a common axle. It is not unusual to see aircraft with 'odd'-coloured wheel hubs — yellow machines with one or two dark grey hubs, or *vice versa*. This photograph affords a close look at the method in which the rotor stays are anchored to the undercarriage when the Sea King is parked on dispersal.

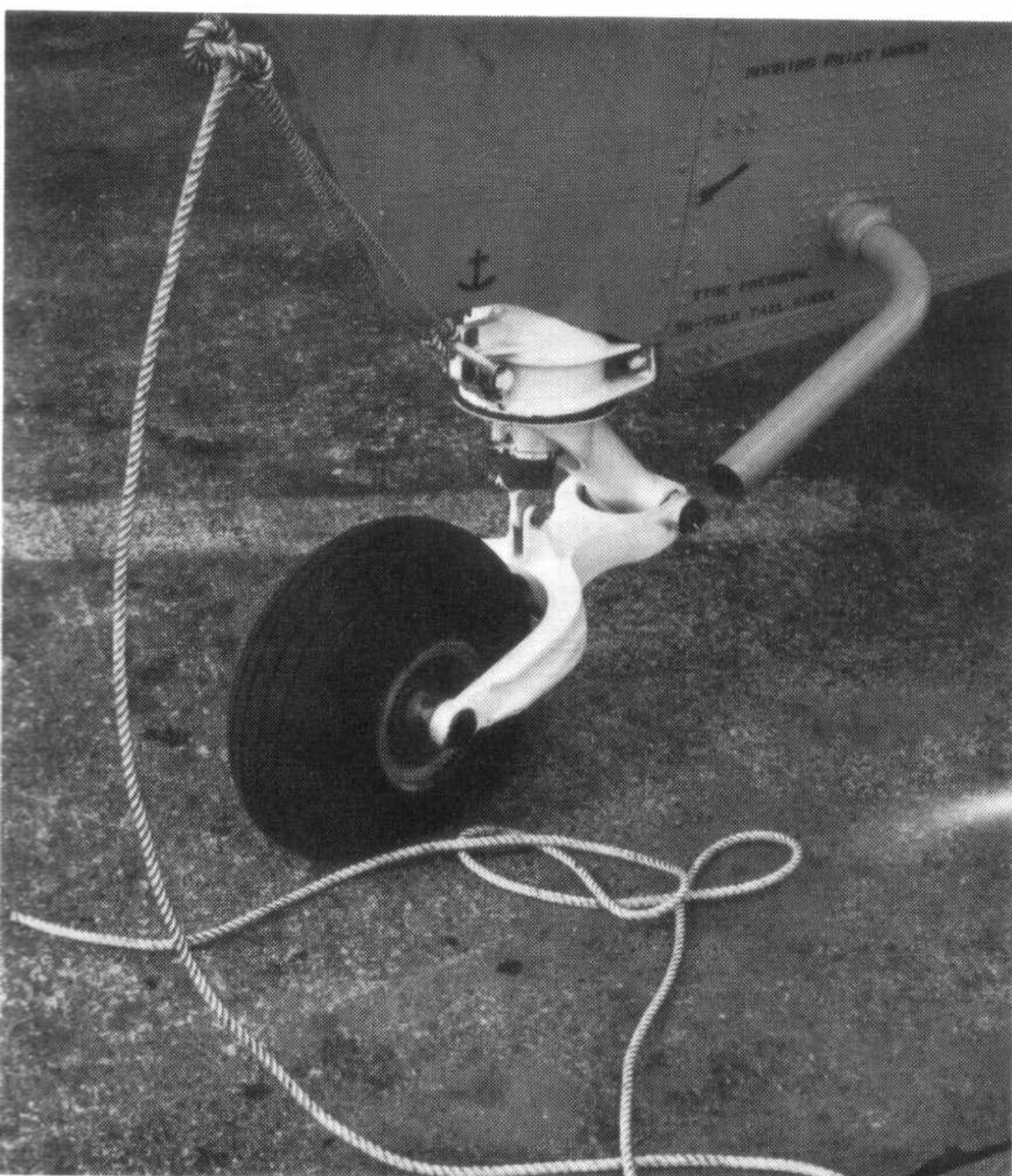
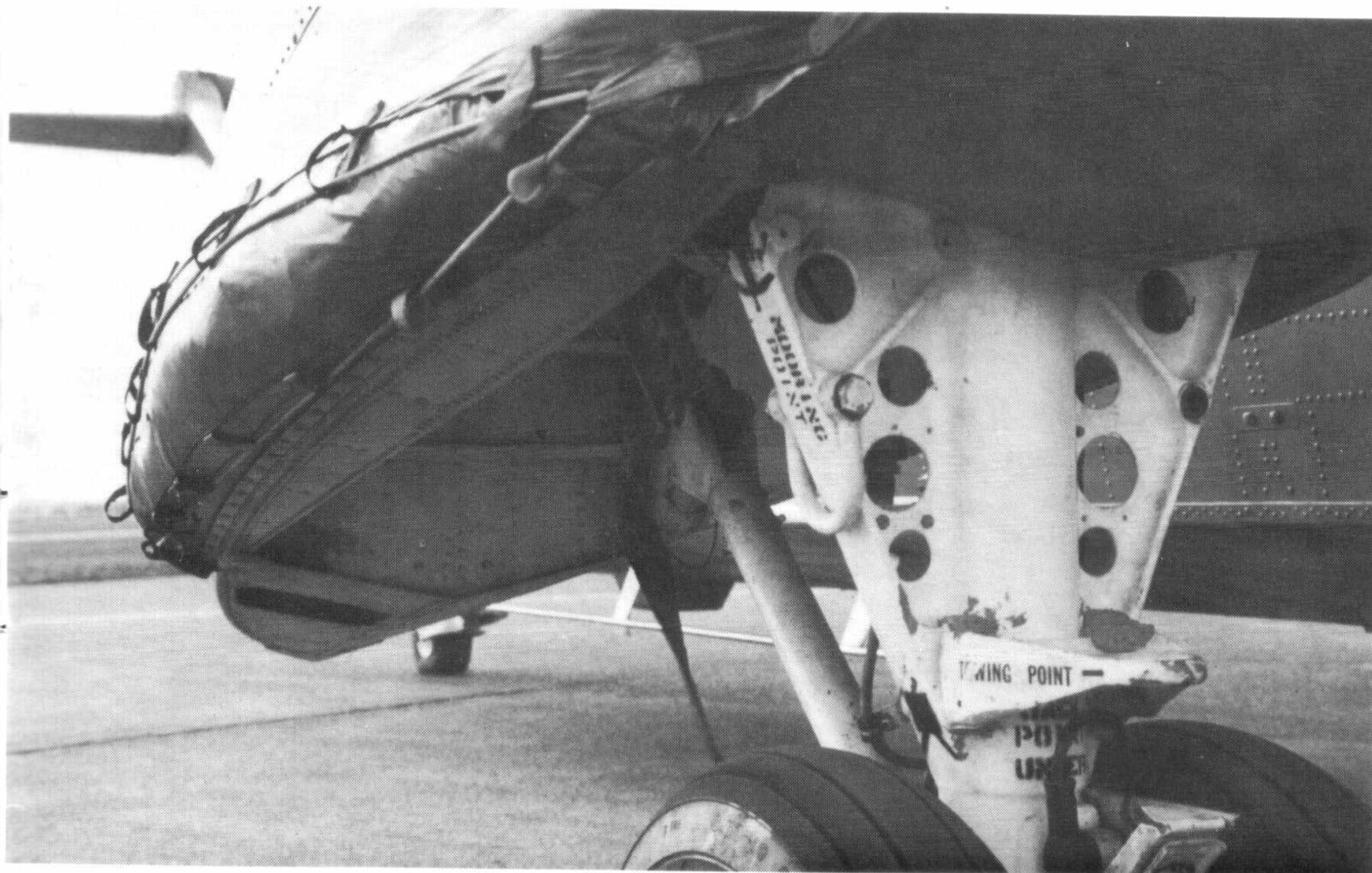
Below right: The port undercarriage gear viewed from the front. The leg is oleo-damped and also has built-in, energy-absorbing honeycomb cartridges as a precaution against heavy landings.

Opposite page top left: Starboard main undercarriage detail, showing the towing and mooring points (although towing is normally carried out via the tailwheel). The bungee fastener for the flotation bag is also visible; inflation of the bags, if required, is achieved via bottles of compressed gas housed in the sponsons.

Opposite page top right: A glimpse inside the port main undercarriage bay. There are no undercarriage doors, the gear retracting backwards to lie semi-recessed in the well. In the event of hydraulic failure, the gear will free-fall forward if unlocked manually.

Opposite page bottom: Three photographs illustrating the tailwheel, a fully castoring, self-centring non-retractable unit. Close by, on the starboard side, is the fuel jettison pipe, and the photograph on the extreme right offers another view of the Pye Olympic mountain rescue antenna. A static discharge wick is just visible attached to the wheel yoke, close to the axle; RAF Sea Kings also have one or two dischargers fitted to the tail stabiliser or, more recently, one on each of the main rotor blades.





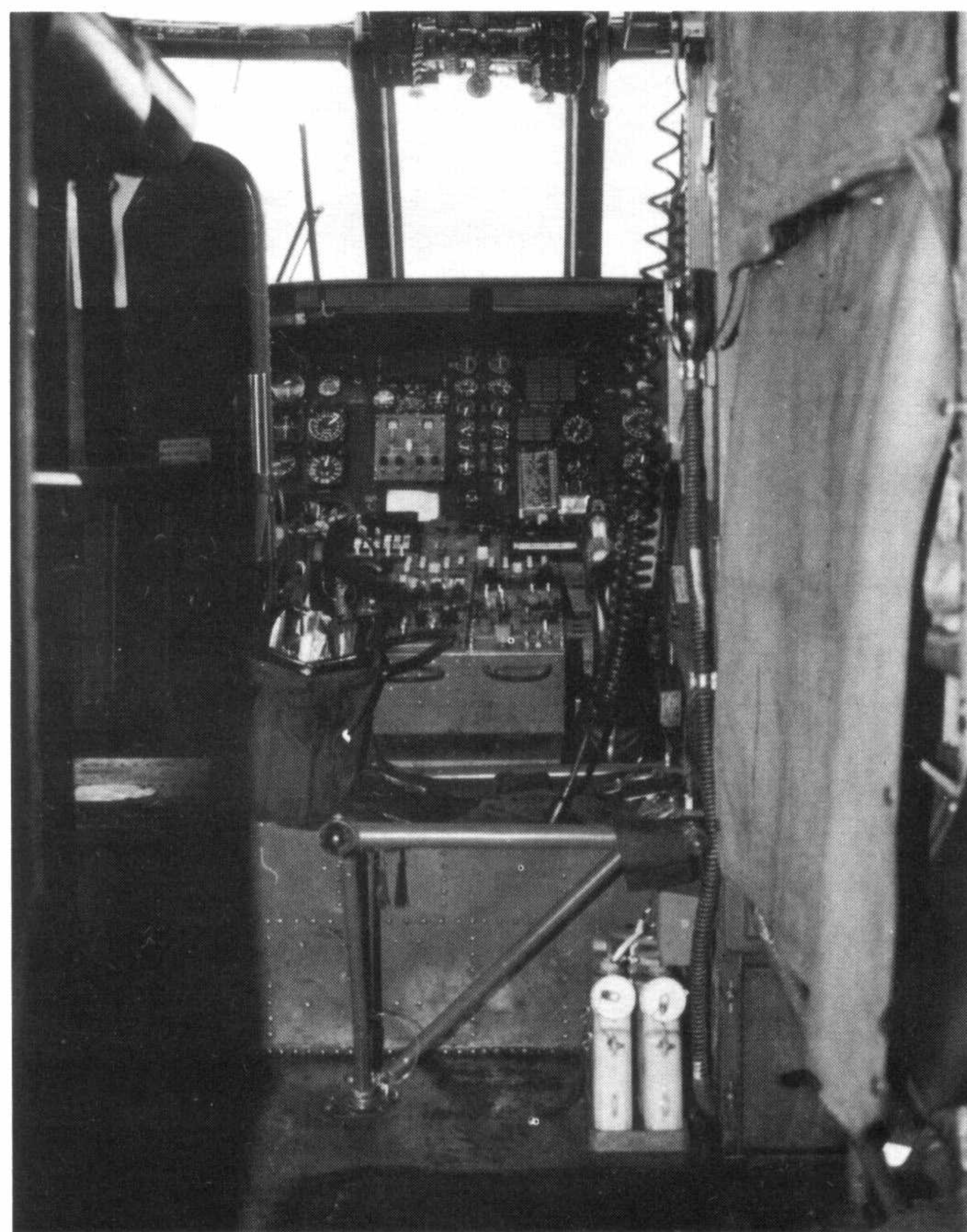
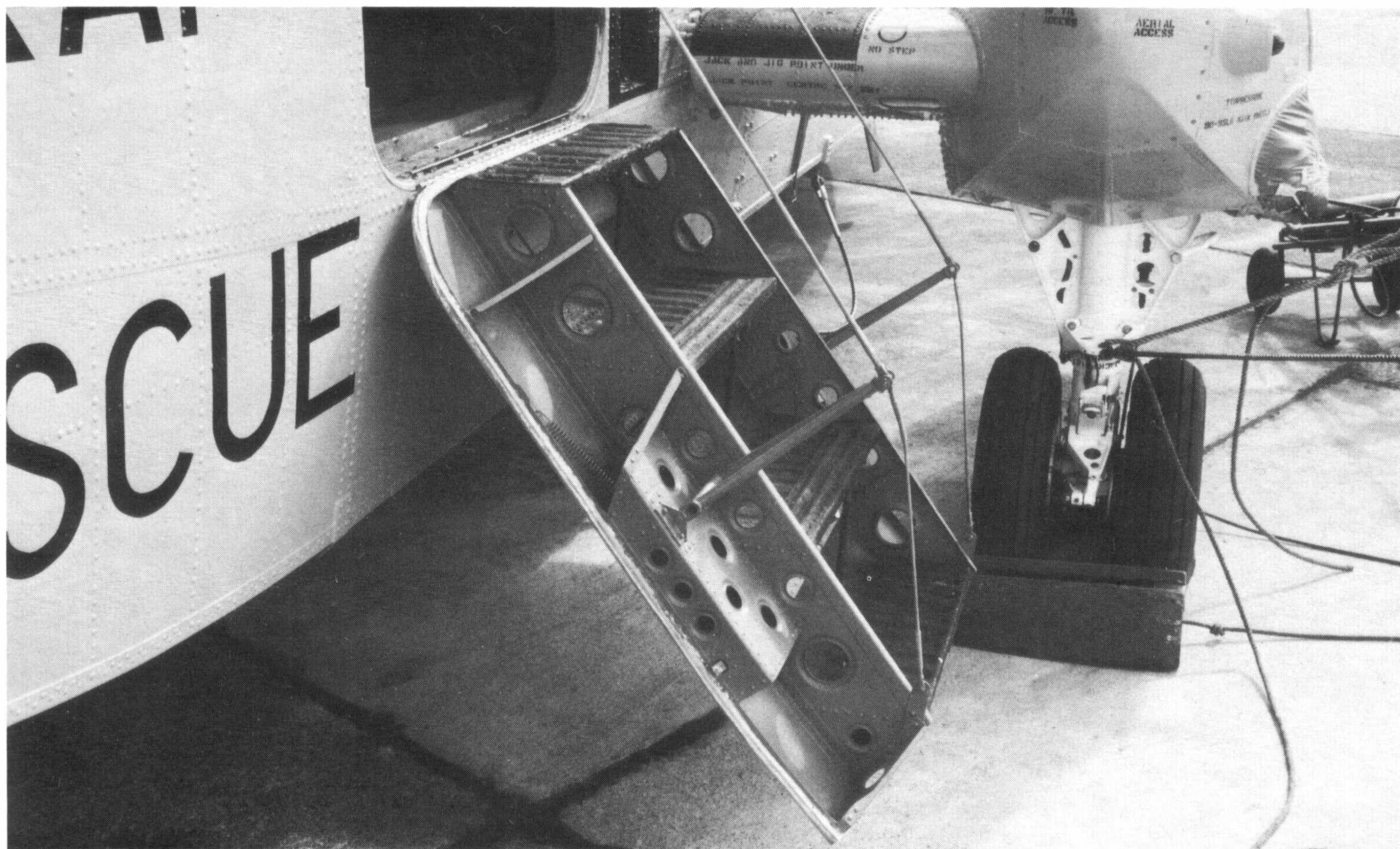
INTERIOR

Below: The lower section of the personnel door on the port side of the Sea King incorporates access steps on its inner surface and is the means by which the crew enter the helicopter. Cables provide support when the door is open.

Bottom left: The view through the open personnel door. The tubular framing of the jump seat can be seen to the left; on the

right-hand side is a folding seat. The specified interior finish of the HAR Mk 3 is Dark Admiralty Grey.

Bottom right: A view forward, towards the cockpit; the jump seat referred to in the previous photograph is here visible in the foreground. The hot water dispenser – supplied as basic equipment – is immediately to the left of this position.



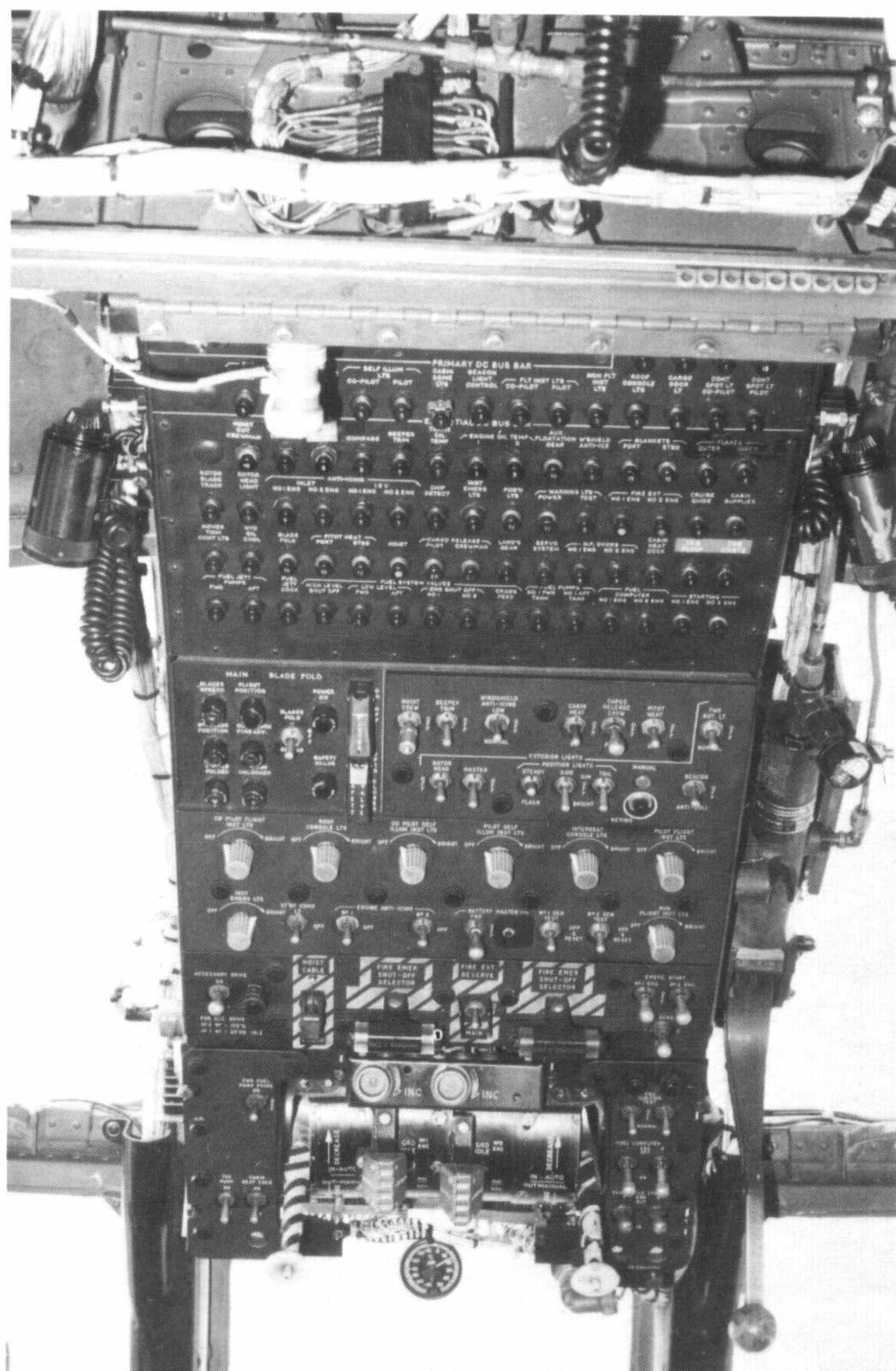
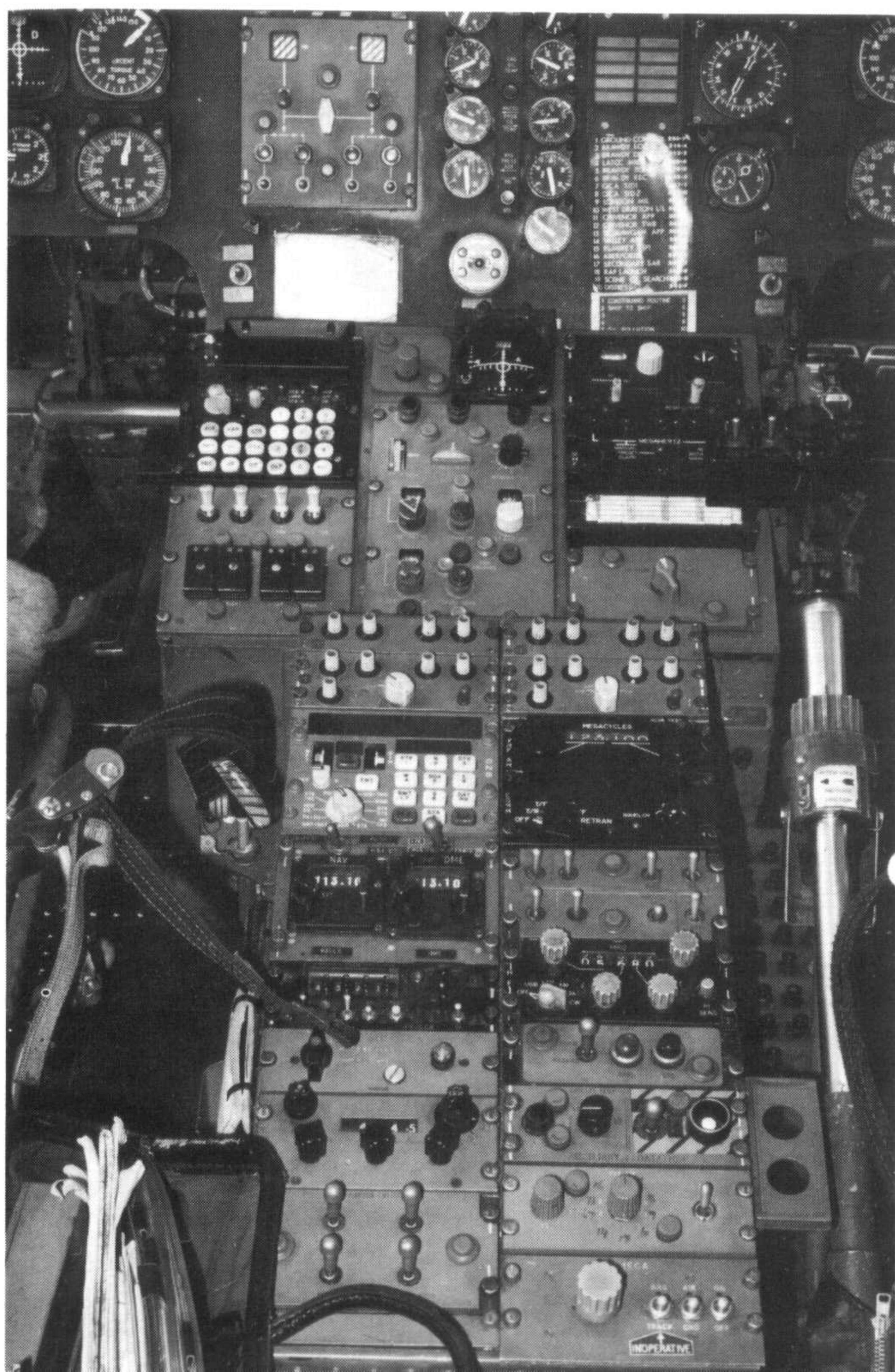


Above: The cockpit layout of a Sea King HAR.3 photographed prior to delivery to the RAF; a comparison with the illustration on page 20, which was taken some six years later, reveals only very minor changes, most noticeably the presence here of the anti-icing indicator on the top edge of the instrument panel coaming. Pilot and co-pilot are each provided with a cyclic pitch control lever (for horizontal direction) between the

knees and a collective pitch control lever (ascent/descent) to the left of the seat. *Westland Helicopters Ltd*

Below left: Interseat console of Sea King XZ585.

Below right: Emergency panel, lighting and blade fold panels, and circuit breakers, together with the engine controls, speed select levers and manual throttles, are located on the overhead console accessible to both pilots.





Above left: Looking aft along the cabin. Two MS.10 dinghies can be seen on the starboard side, beyond the sliding cabin door. The waterproof floor covering is fitted with phenolic strips to facilitate the movement of cargo and with vertical webs around the perimeter to restrict the movement of water.
Above right: The radar operator's position is on the port side

of the cabin and is provided with blackout screens for both the entranceway and the window.
Below: Starboard side, forward of the cabin door. This is one of the two 7-man 'troop'-type seats that are included in a typical layout. Note role equipment, torch and radio at right. The machine here is again XZ585.





Above left: The 7-man seat along the port side; beyond is the Radop's station. The equipment suspended from the roof of the cabin comprises security belts for use by crew members working at the open main cabin door.

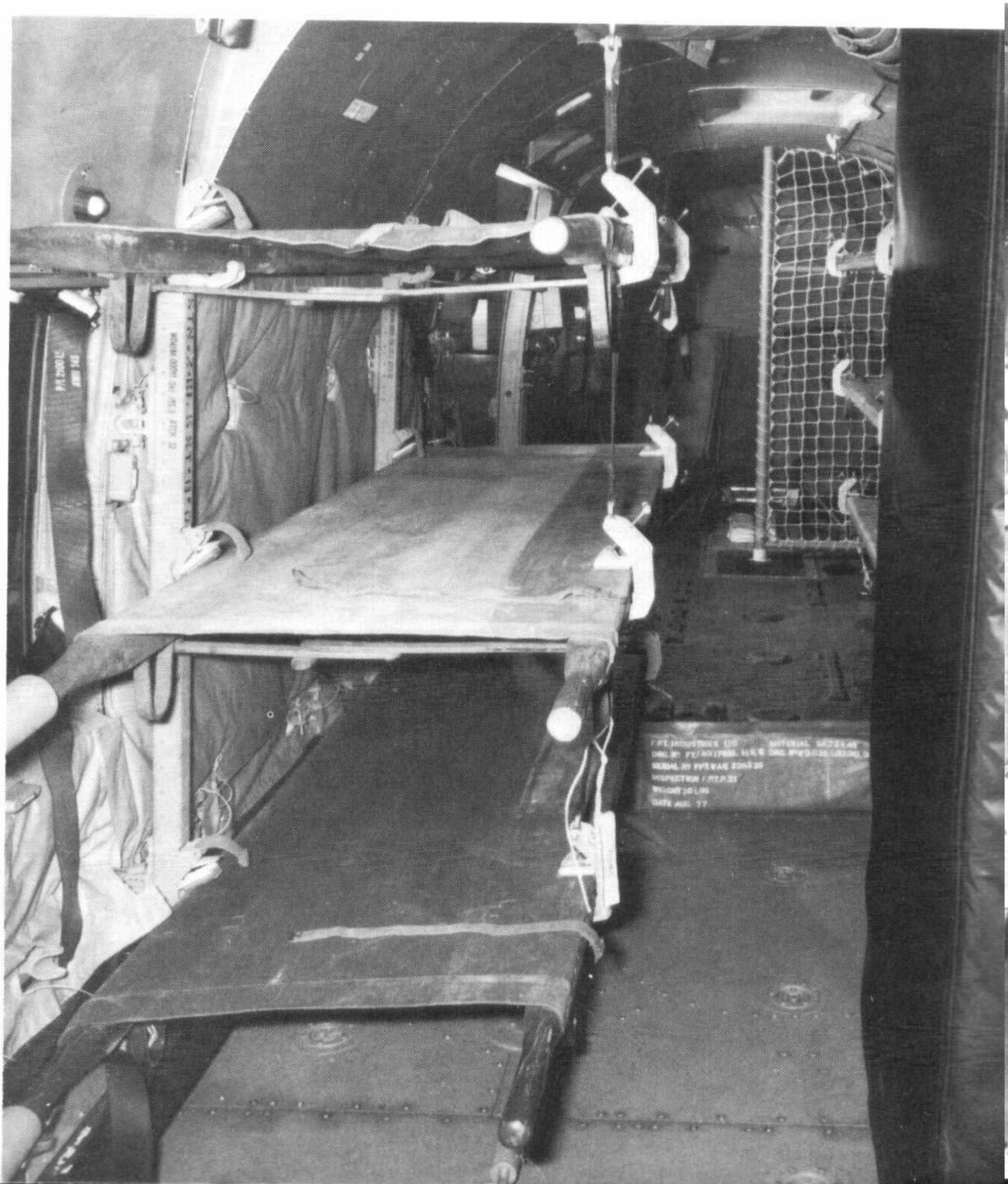
Top right: Signal pistol, flares and fire extinguisher, located just aft of the cabin door, with a crash rescue axe on top of the dinghies.

Above right: Observers' seats at the extreme rear of the

cabin, with thermal barrier fitted behind.

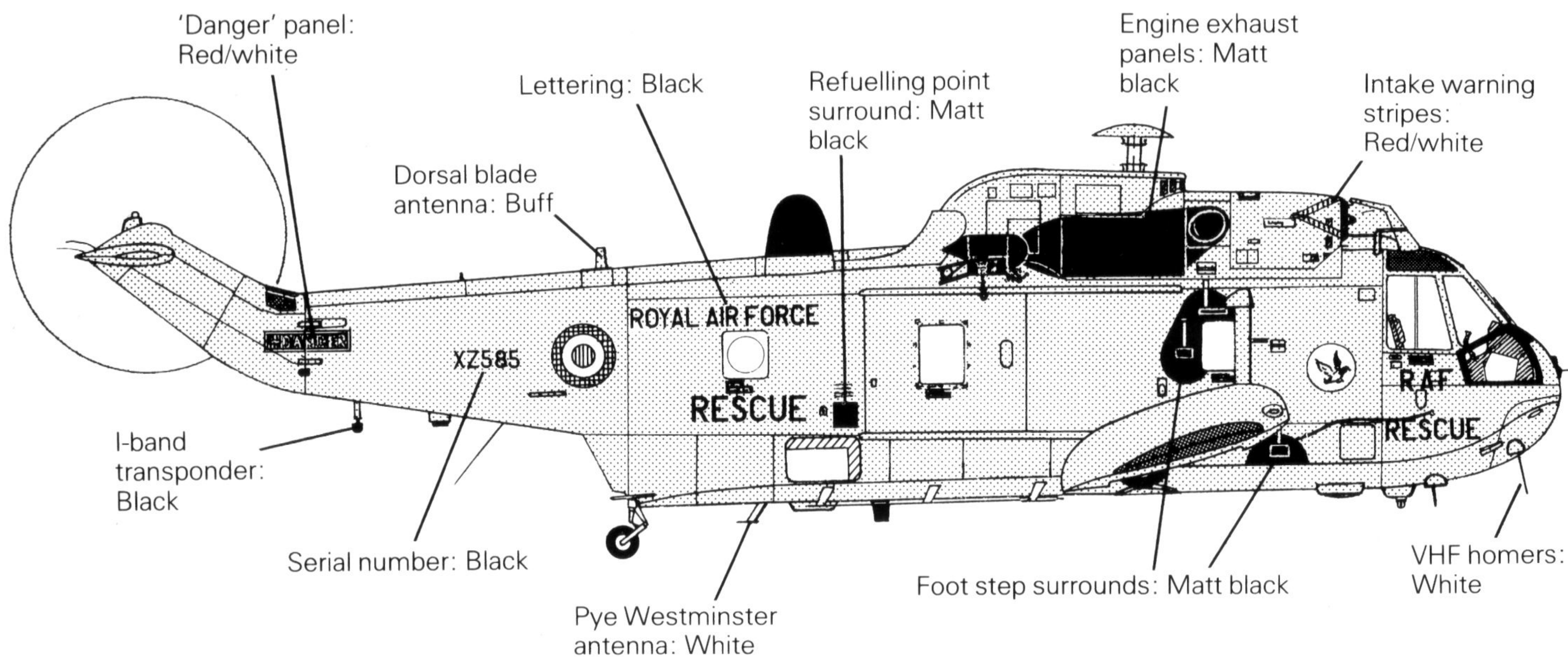
Below left: Casevac configuration, looking forward, with six stretchers fitted. *Westland Helicopters Ltd*

Below right: Casevac layout looking aft. This and the previous photograph depict an early installation; modifications (for example, to the clamps) have since been made. The safety net visible in the background is no longer used. *Westland Helicopters Ltd*



SCALE COLOUR PLANS

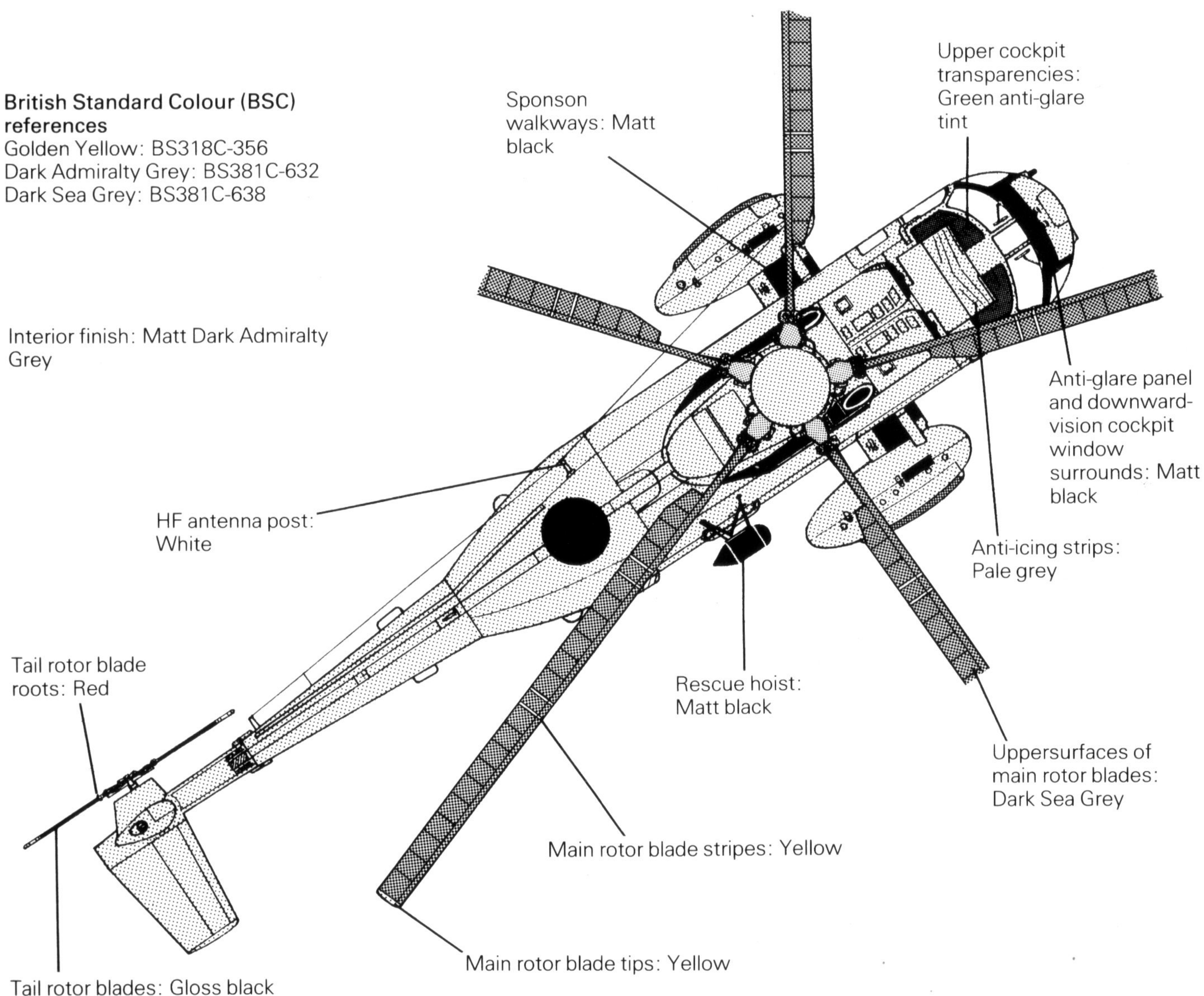
**WESTLAND SEA KING HAR Mk 3, 'B' FLIGHT, No 202 SQUADRON,
RAF BRAWDY, SEPTEMBER 1984**



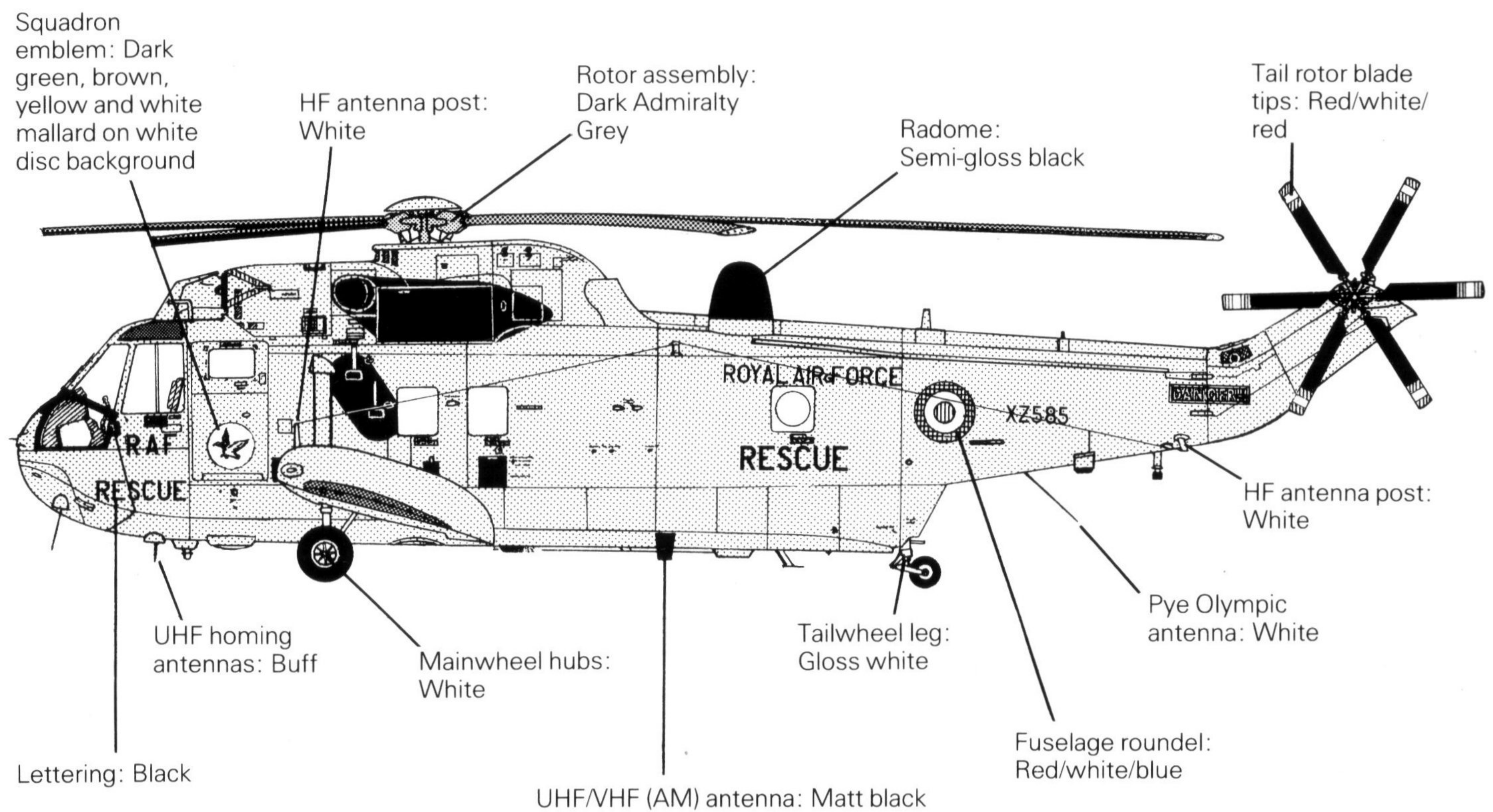
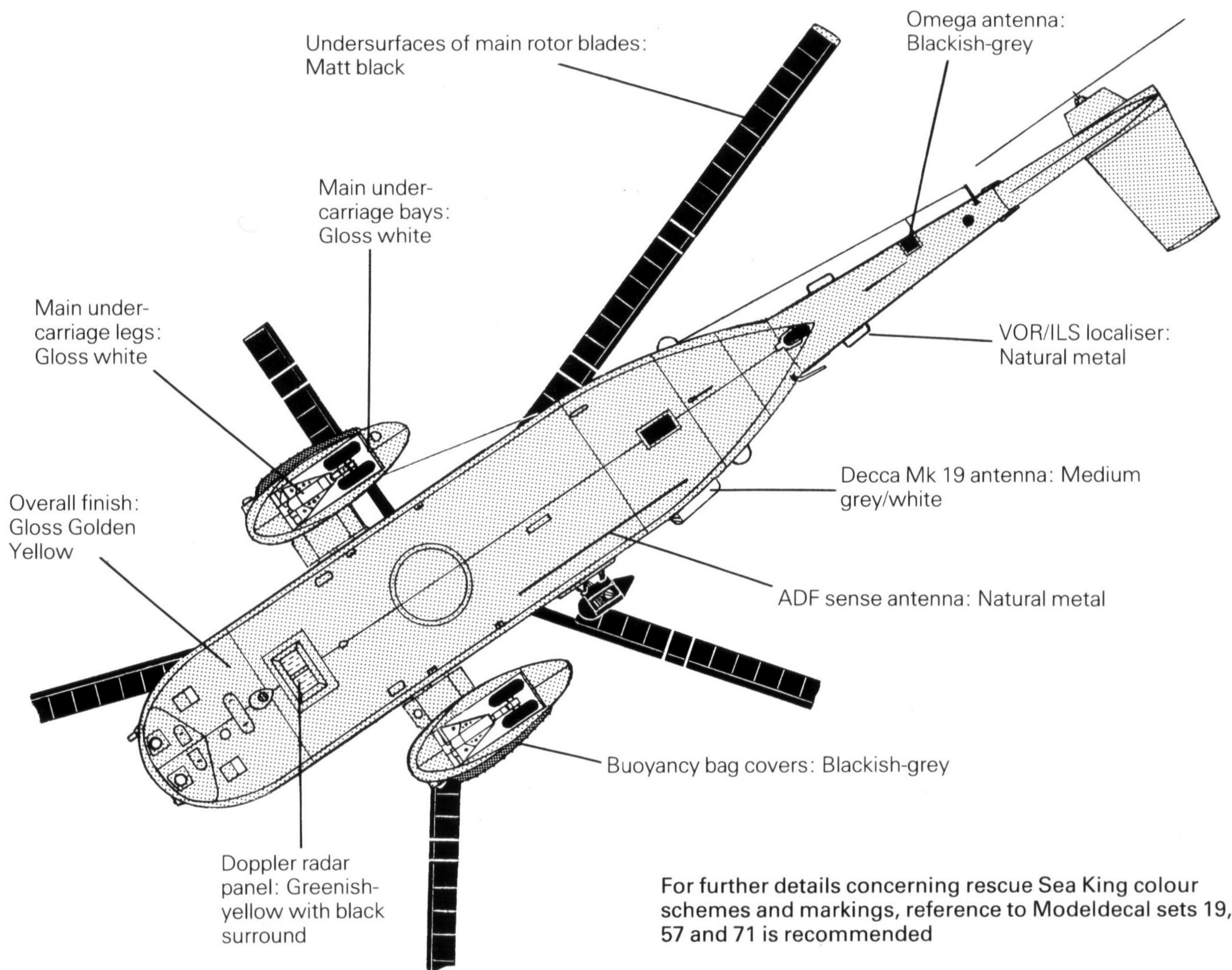
British Standard Colour (BSC) references

Golden Yellow: BS318C-356
Dark Admiralty Grey: BS381C-632
Dark Sea Grey: BS381C-638

Interior finish: Matt Dark Admiralty Grey

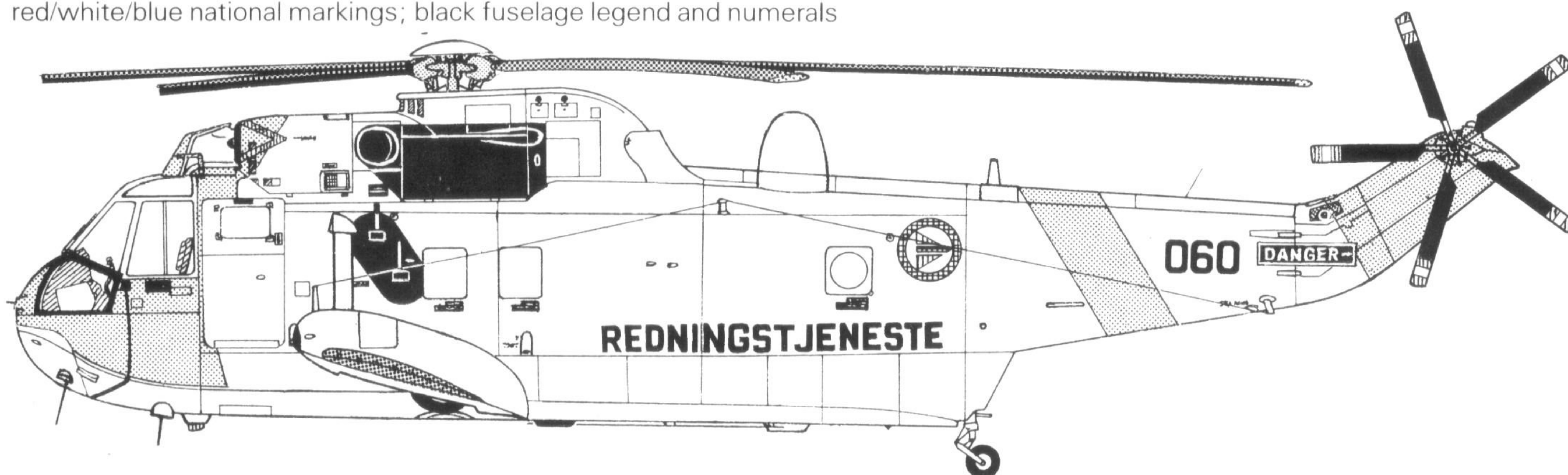


1:96 scale



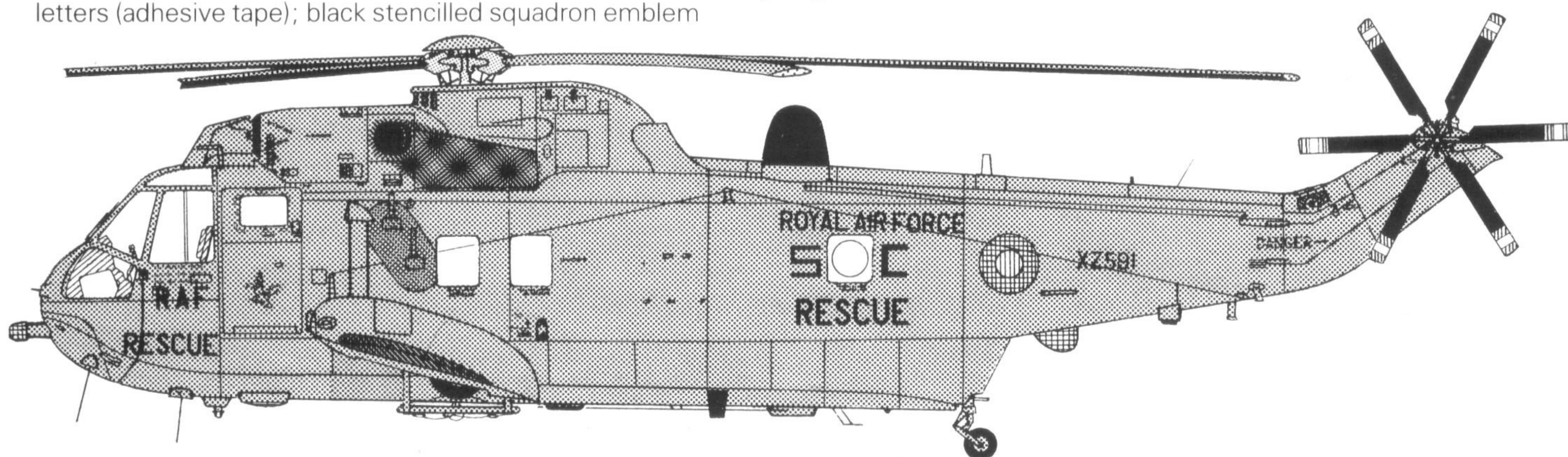
Below: Westland Sea King Mk 43, No 330 Sqn, Royal Norwegian Air Force, Bodo, circa 1978

White overall with Dockerblaze Orange nose, engine intake, fuselage and tail pylon trim; red/white/blue national markings; black fuselage legend and numerals



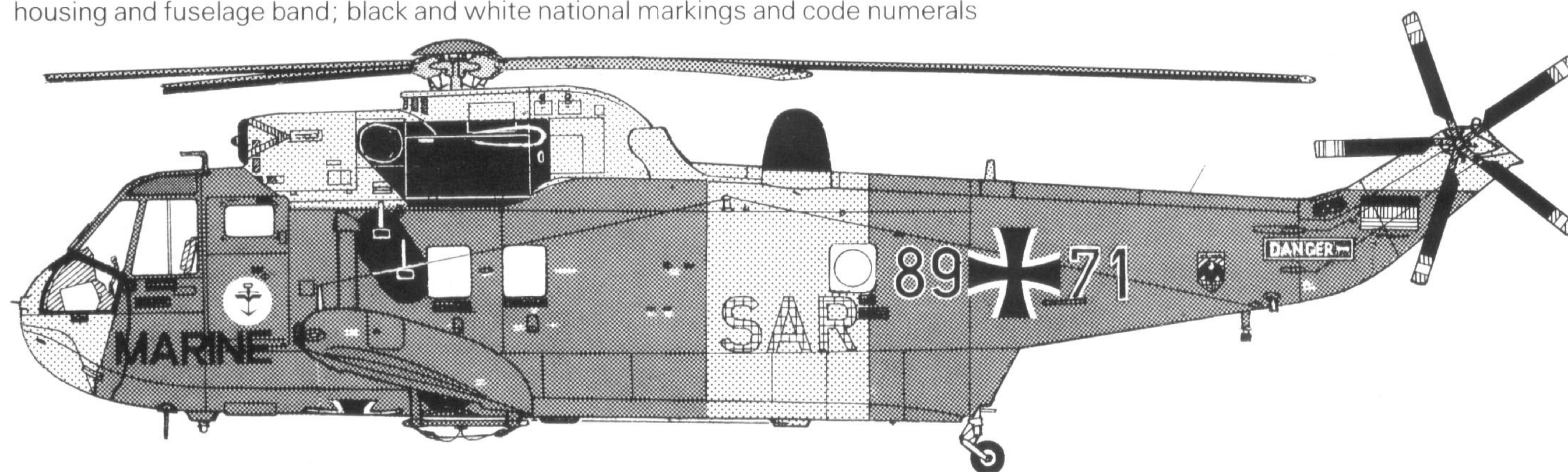
Below: Westland Sea King HAR Mk 3, No 1564 Flight, Strike Command, RAF Stanley, Autumn 1982

Dark Sea Grey overall; red/blue fuselage roundels; black fuselage legends and serials; black code letters (adhesive tape); black stencilled squadron emblem



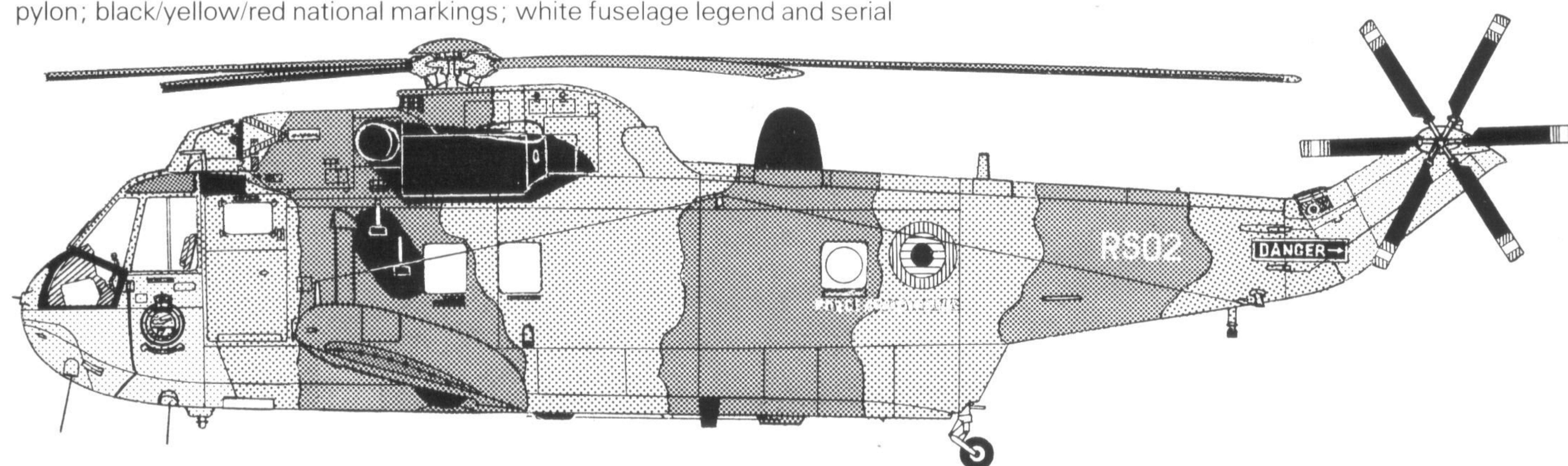
Below: Westland Sea King Mk 41, *Marinefliegergruppe 5, Bundesmarine* (Federal German Navy), Kiel, 1983

Dark Grey (Basalt Grey) overall with fluorescent orange nose, tail pylon tip, engine/transmission housing and fuselage band; black and white national markings and code numerals

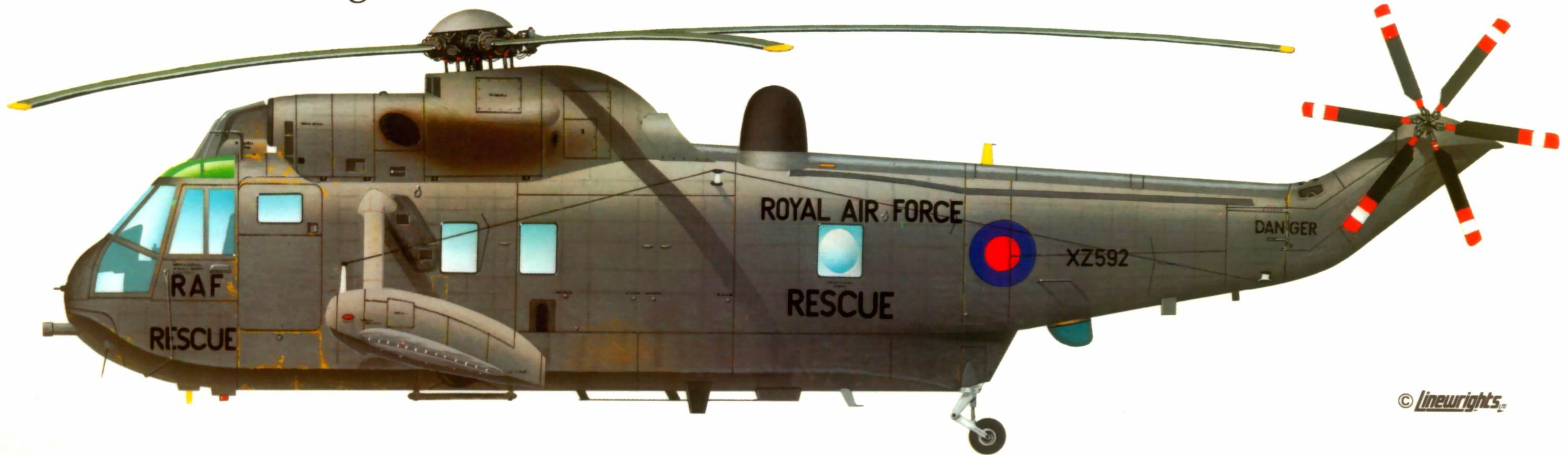


Below: Westland Sea King Mk 48, No 40 *Smaldeel*, *Force Aérienne Belge*, Koksijde, 1983

Light Stone and Olive Green camouflage with Dockerblaze Orange nose and intake trim and tail pylon; black/yellow/red national markings; white fuselage legend and serial



Westland Sea King HAR Mk 3







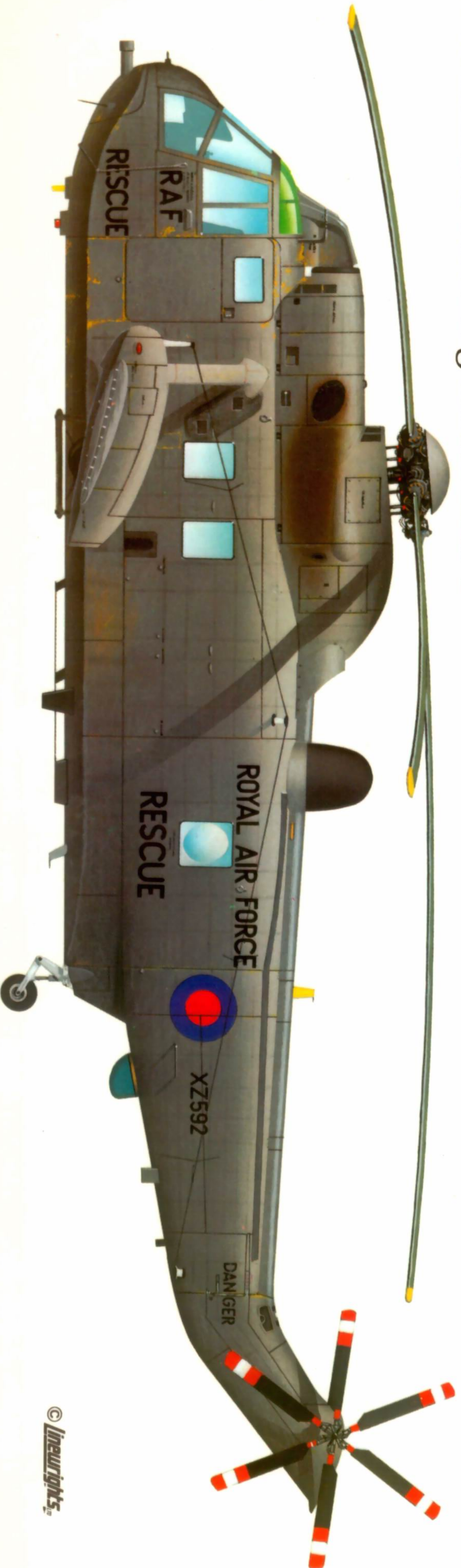
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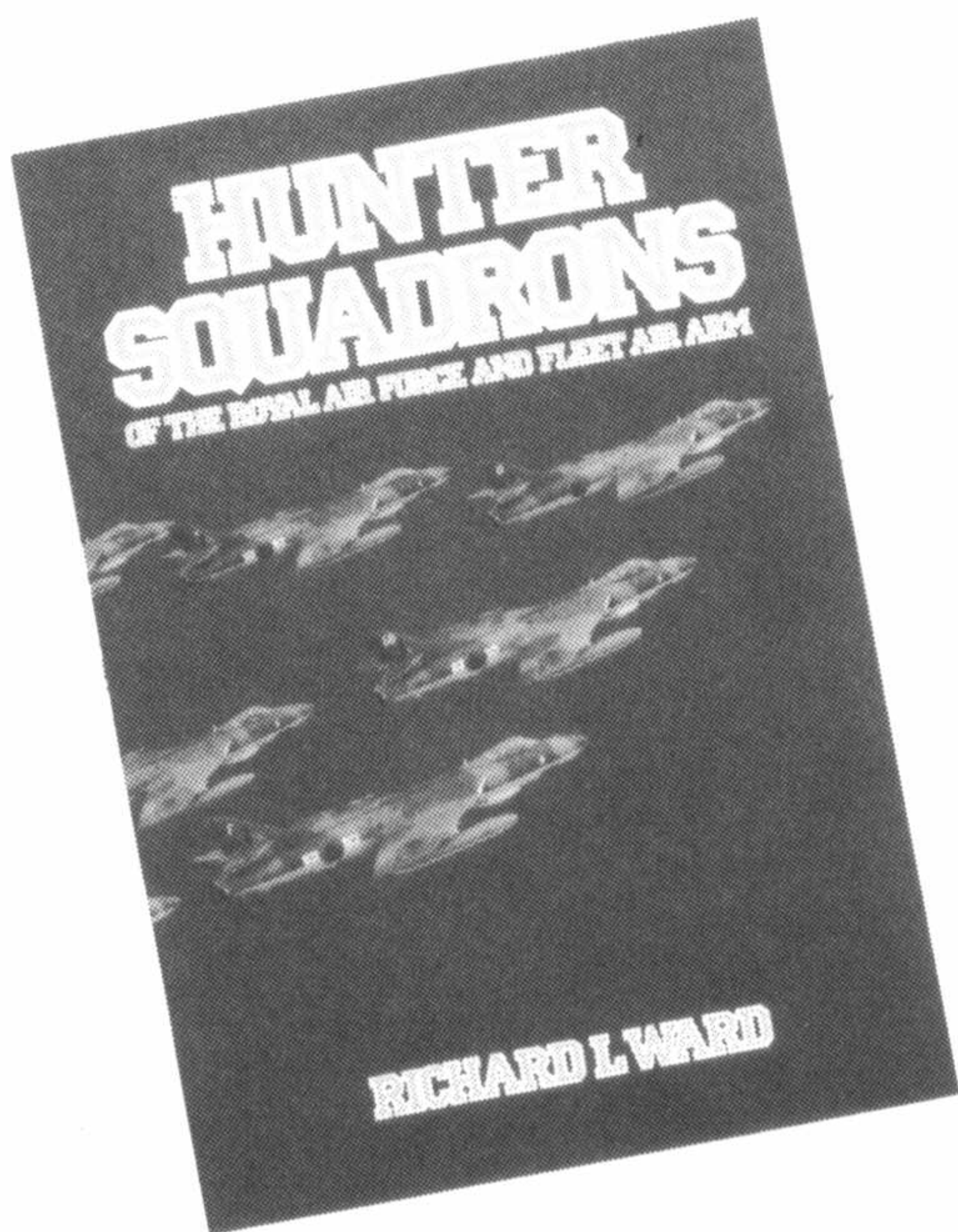
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